THE STATE OF TEXAS §
§
COUNTY OF HARRIS §

I. PARTIES

A.   <u>Address</u>

THIS AGREEMENT FOR A MOBILE AMBIENT AIR MONITORING LABORATORY ("Agreement") is made by and between the **CITY OF HOUSTON, TEXAS** ("City"), a municipal corporation, and **PROVIDENCE ENGINEERING AND ENVIRONMENTAL GROUP LLC** a Louisiana limited liability corporation doing business in Texas ("Contractor" or "Providence Engineering").

The initial addresses of the parties, which one party may change by giving written notice to the other party, are as follows:

<u>City</u>

Director of Houston Department
Of Health and Human Services
or Designee
P. O. Box 1562
Houston, Texas 77054

<u>Contractor</u>

Providence Engineering and Environmental
Group LLC
1201 Main Street
Baton Rouge, LA 70802

The Parties agree as follows:

B.   <u>Table of Contents</u>

This Agreement consists of the following sections:

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EXHIBITS

A.   **Scope of Services**

B.   **Equal Employment Opportunity Ordinance**

C.   **MWBE Subcontract Terms**

D.   **Drug Policy Compliance Agreement**

E.   **Contractor's Certification of No Safety Impact Positions**

F.   **Drug Policy Compliance Declaration**

G.   **Pricing**

H.   **Acceptance Criteria**

C.   <u>Parts Incorporated</u>

The above-described exhibits are incorporated into this Agreement.

D.   <u>Controlling Parts</u>

If a conflict among the sections and exhibits arises, the sections shall control over the exhibits.

E.   Signatures

The Parties have executed this Agreement in multiple copies, each of which is an

original.

APPROVED AS TO FORM: PROVIDENCE ENGINEERING AND
                                        ENVIRONMENTAL GROUP LLC

By: _____   By: _____
Name: YOUHENG ZENG   RICH MAJOR
Title: Managing Partner   SR. MANAGING PARTNER

ATTEST/SEAL: CITY OF HOUSTON, TEXAS
                                        Signed by:

_____   _____
City Secretary   Mayor

APPROVED: COUNTERSIGNED:

_____   _____
Director, Houston Department of   City Controller
Health and Human Services

APPROVED AS TO FORM: DATE COUNTERSIGNED:

_____   _____1-3-07_____
Sr. Assistant City Attorney
L.D. File No.

II. DEFINITIONS

As used in this Agreement, the following terms have the meanings set out below:

"Agreement" means this contract between the Parties, including all exhibits and any written amendments authorized by City Council and Contractor.

"City" is defined in the preamble of this Agreement and includes its successors and assigns.

"Contractor" is defined in the preamble of this Agreement and includes its successors and assigns.

"Countersignature Date" means the date shown as the date countersigned on the signature page of this Agreement.

"Director" means the Director of the Houston Department of Health and Human Services, or the person he or she designates.

"MAAML" or "System" means Mobile Ambient Air Monitoring laboratory vehicle as described in Exhibits "A" and "G".

"Parties" mean all the entities set out in the Preamble who are bound by this Agreement.

III. DUTIES OF CONTRACTOR

A.   Scope of Services

(1)   In consideration of the payments specified in this Agreement, Contractor shall provide a fully integrated MAAML vehicle possessing the key features and functionabilities as described in Exhibit "A." However, Contractor shall not perform any services under this Agreement until it receives a written Notice to Proceed from the Director.

(2)   Contractor shall deliver the MAAML vehicle to the City no later than 150 days after it receives the City's written Notice to Proceed.

(3)   Since time is of the essence of this Agreement, if Contractor fails to deliver the MAAML vehicle on time, the City will suffer harm, although actual damages from that harm are difficult to estimate. If the Contractor does not deliver the MAAML vehicle by the delivery date described above, then the price reduction set forth below will be applied by the City to the total price of the MAAML vehicle. The price reduction described below is a one-time reduction and is not cumulative. The reduction amount is a reasonable forecast of just compensation for the harm to the City. The Director, in exercising his discretion hereunder, shall act in good faith and shall consider mitigating circumstances in determining whether or not to reduce the price.

The Director will not take price reductions for delivery delays caused by natural disasters or terrorist attacks.

Number of Calendar Days that Delivery Extends Beyond Due Date	One Time Payment Reduction
0-14	$0.00
16-30	$10,000
31-60	$25,000
61 and beyond	$35,000

The delivery date may be extended by the Director at his sole discretion.

(4)   In consideration for the City's payments to Contractor for AIM Annual Services, Contractor grants City a non-exclusive, non-transferable license to use Contractor's AIM System Software program as described in Exhibit "A" Section 2.3.13 to run the MAAML vehicle's ambient air quality monitoring applications. Under this license, City has the right to permit an unlimited number of City end-users to access the AIM System Software utilizing common web

browser software. Contractor's license does not include the right for the City to install the software on the City's computers.

(5)   Contractor shall transfer to City licenses obtained from third party software vendors for all third party software licenses purchased for the City for the MAAML.

(6)   Prior to delivery of the MAAML vehicle to the City, Contractor shall shop-test the MAAML to determine if the vehicle operates in accordance with the specifications set forth in Exhibit "A".

(7)   Upon delivery of the MAAML vehicle, the City and Contractor shall test the System to determine if the System functions in accordance with the specifications set forth in Exhibit "A". During the testing, the Director may request, and Contractor shall provide, on-site assistance of Contractor personnel. The testing shall be performed so as to determine if the MAAML meets the Acceptance Criteria set forth in Exhibit "H". During the testing, the City shall have the right to use any and all hardware and software with "live" data for test purposes.

Following completion of testing, the Director shall notify Contractor in writing of all issues, errors or failures disclosed by the testing, if any, of the MAAML to meet the Acceptance Criteria set forth in Exhibit "H". In the event of non-approval, Contractor shall, within fourteen (14) calendar days following such notice, correct the issues, errors or failures contained in the Director's notice. The Director shall thereafter have fourteen (14) calendar days to run a second series of tests on the subject issues, errors or failures. Failure of the Contractor to correct the issues, errors or failures shall entitle the Director, at his option, to either allow Contractor to continue to correct any deficiencies or to terminate this Agreement. Failure to pass the acceptance testing shall result in the City's refusal to accept delivery of the MAAML vehicle and refusal to transfer title to the City's name. Within thirty (30) days of the City's termination of

this Agreement under this Section, Contractor shall return all funds paid to Contractor by the City under this Agreement. If the City terminates this Agreement due to the failure of the MAAML to pass acceptance testing, then Contractor shall return the MAAML at its sole expense to the manufacturer.

The above time periods in this Section are subject to change, as jointly agreed to by the Director and Contractor in writing during the course of the testing.

Final acceptance of the MAAML vehicle by the City will occur when all testing has been completed and the Director determines that the MAAML meets the Acceptance Criteria set forth in Exhibit "H".

B.   **RELEASE**

CONTRACTOR AGREES TO AND SHALL RELEASE THE CITY, ITS AGENTS, EMPLOYEES, OFFICERS, AND LEGAL REPRESENTATIVES (COLLECTIVELY THE "CITY") FROM ALL LIABILITY FOR INJURY, DEATH, DAMAGE, OR LOSS TO PERSONS OR PROPERTY SUSTAINED IN CONNECTION WITH OR INCIDENTAL TO PERFORMANCE UNDER THIS AGREEMENT.

C.   **INDEMNIFICATION**

CONTRACTOR AGREES TO AND SHALL DEFEND, INDEMNIFY, AND HOLD THE CITY, ITS AGENTS, EMPLOYEES, OFFICERS, AND LEGAL REPRESENTATIVES (COLLECTIVELY THE "CITY") HARMLESS FOR ALL CLAIMS, CAUSES OF ACTION, LIABILITIES, FINES, AND EXPENSES (INCLUDING, WITHOUT LIMITATION, ATTORNEYS= FEES, COURT COSTS, AND ALL OTHER DEFENSE COSTS AND INTEREST) FOR INJURY, DEATH, DAMAGE, OR LOSS TO PERSONS OR PROPERTY SUSTAINED IN CONNECTION WITH OR

INCIDENTAL TO PERFORMANCE UNDER THIS AGREEMENT INCLUDING, WITHOUT LIMITATION, THOSE CAUSED BY:

(1) CONTRACTOR=S AND/OR ITS AGENTS=, EMPLOYEES=, OFFICERS=,

DIRECTORS=, CONTRACTORS=, OR SUBCONTRACTORS= (COLLECTIVELY IN NUMBERED PARAGRAPHS 1-3, "CONTRACTOR") ACTUAL OR ALLEGED NEGLIGENCE OR INTENTIONAL ACTS OR OMISSIONS;

(2) THE CITY=S AND CONTRACTOR=S ACTUAL OR ALLEGED CONCURRENT NEGLIGENCE, WHETHER CONTRACTOR IS IMMUNE FROM LIABILITY OR NOT; AND

(3) THE CITY=S AND CONTRACTOR=S ACTUAL OR ALLEGED STRICT PRODUCTS LIABILITY OR STRICT STATUTORY LIABILITY, WHETHER CONTRACTOR IS IMMUNE FROM LIABILITY OR NOT.

CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE CITY HARMLESS DURING THE TERM OF THIS AGREEMENT AND FOR FOUR YEARS AFTER THE AGREEMENT TERMINATES. CONTRACTOR=S INDEMNIFICATION IS LIMITED TO $500,000 PER OCCURRENCE. CONTRACTOR SHALL NOT INDEMNIFY THE CITY FOR THE CITY=S SOLE NEGLIGENCE.

D. <u>INDEMNIFICATION PROCEDURES</u>)

(1) <u>Notice of Claims</u>. If the City or Contractor receives notice of any claim or circumstances which could give rise to an indemnified loss, the receiving party shall give written notice to the other party within 10 days. The notice must include the following:

(a)   a description of the indemnification event in reasonable detail,

(b)   the basis on which indemnification may be due, and

(c)   the anticipated amount of the indemnified loss.

This notice does not estop or prevent the City from later asserting a different basis for indemnification or a different amount of indemnified loss than that indicated in the initial notice. If the City does not provide this notice within the 10 day period, it does not waive any right to indemnification except to the extent that Contractor is prejudiced, suffers loss, or incurs expense because of the delay.

(2)   Defense of Claims

(a)   Assumption of Defense. Contractor may assume the defense of the claim at its own expense with counsel chosen by it that is reasonably satisfactory to the City. Contractor shall then control the defense and any negotiations to settle the claim. Within 10 days after receiving written notice of the indemnification request, Contractor must advise the City as to whether or not it will defend the claim. If Contractor does not assume the defense, the City shall assume and control the defense, and all defense expenses constitute an indemnification loss.

(b)   Continued Participation. If Contractor elects to defend the claim, the City may retain separate counsel to participate in (but not control) the defense and to participate in (but not control) any settlement negotiations. Contractor may settle the claim without the consent or agreement of the City, unless it (i) would result in injunctive relief or other equitable remedies or otherwise require the City to comply with restrictions or limitations that adversely affect the City, (ii) would require the City to pay amounts that Contractor does not fund in full, (iii) would not result in the City=s full and complete release from all liability to the plaintiffs or claimants who are parties to or otherwise bound by the settlement.

E.   Insurance

Contractor shall maintain in effect certain insurance coverage, which is described as follows:

(1)   Minimum Insurance Requirements.   Contractor shall maintain the following insurance coverage in the following amounts:

(Coverage)	(Limit of Liability)
Workers' Compensation	Statutory for Workers' Compensation
Employer's Liability	Bodily Injury by accident $500,000 (each accident) Bodily Injury by Disease $500,000 (policy limit) Bodily Injury by Disease $500,000 (each employee)
Commercial General Liability: Including Broad Form Coverage, Contractual Liability, Bodily and Personal Injury, and Completed Operations	Bodily Injury and Property Damage, Combined Limits of $1,000,000 each Occurrence and $1,000,000 aggregate
Automobile Liability Insurance (for vehicles Contractor uses in performing under this Agreement, including Employer's Non-Owned and Hired Auto Coverage)	$1,000,000 combined single limit

Defense costs are excluded from the face amount of the policy.
Aggregate Limits are per 12-month policy period
unless otherwise indicated.

(2)   Form of Policies.   The Director may approve the form of the insurance policies, but nothing the Director does or fails to do relieves Contractor from its duties to provide the required coverage under this Agreement.   The Director's actions or inactions do not waive the City's rights under this Agreement.

(3)   Issuers of Policies.   The issuer of any policy (1) shall have a Certificate of Authority to transact insurance business in Texas or (2) shall be an eligible non-admitted insurer in the State of Texas and have a Best's rating of at least B+ and a

Best's Financial Size Category of Class VI or better, according to the most current edition Best's Key Rating Guide.

(4) Insured Parties. Each policy, except those for Workers' Compensation, and Employer's Liability, must name the City (and its officers, agents, and employees) as Additional Insured parties on the original policy and all renewals or replacements.

(5) Deductibles. Contractor shall be responsible for and pay any claims or losses to the extent of any deductible amounts and waives any claim it may have for the same against the City, its officers, agents, or employees.

(6) Cancellation. Each policy must state that it may not be canceled, materially modified, or nonrenewed unless the insurance company gives the Director 30 days' advance written notice. Contractor shall give written notice to the Director within five days of the date on which total claims by any party against Contractor reduce the aggregate amount of coverage below the amounts required by this Agreement. In the alternative, the policy may contain an endorsement establishing a policy aggregate for the particular project or location subject to this Agreement.

(7) Subrogation. Each policy must contain an endorsement to the effect that the issuer waives any claim or right of subrogation to recover against the City, its officers, agents, or employees.

(8) Endorsement of Primary Insurance. Each policy, except Workers' Compensation, must contain an endorsement that the policy is primary to any other insurance

available to the Additional Insured with respect to claims arising under this Agreement.

(9)   Liability for Premium. Contractor shall pay all insurance premiums, and the City shall not be obligated to pay any premiums.

(10)   Subcontractors. Contractor shall require all subcontractors to carry insurance naming the City as an additional insured and meeting all of the above requirements except amount. The amount must be commensurate with the amount of the subcontract, but in no case less than $500,000 per occurrence. Contractor shall provide copies of insurance certificates to the Director.

(11)   Proof of Insurance.

(a)   Prior to execution of this Agreement, Contractor shall furnish the Director with Certificates of Insurance, along with an Affidavit from Contractor confirming that the Certificates accurately reflect the insurance coverage maintained. If requested in writing by the Director, Contractor shall furnish the City with certified copies of Contractor=s actual insurance policies.

(b)   Contractor shall continuously and without interruption, maintain in force the required insurance coverages specified in this Section. If Contractor does not comply with this requirement, the Director, at his or her sole discretion, may

   (1)   immediately suspend Contractor from any further performance under this Agreement and begin procedures to terminate for default, or

   (2)   purchase the required insurance with City funds and deduct the cost of the premiums from amounts due to Contractor under this Agreement.

The City shall never waive or be estopped to assert its right to terminate this Agreement because of its acts or omissions regarding its review of insurance documents.

(12)   Other Insurance. If requested by the Director, Contractor shall furnish adequate evidence of Social Security and Unemployment Compensation Insurance, to the extent applicable to Contractor's operations under this Agreement.

F.   Licenses and Permits

Contractor shall obtain, maintain, and pay for all licenses, permits, and certificates required by any statute, ordinance, rule, or regulation.

G.   Compliance with Laws

Contractor shall comply with all applicable state and federal laws and regulations and the City Charter and Code of Ordinances.

H.   Compliance with Equal Opportunity Ordinance

Contractor shall comply with the City's Equal Employment Opportunity Ordinance as set out in Exhibit "B".

I.   Drug Abuse Detection and Deterrence

(1)   It is the policy of the City to achieve a drug-free workforce and workplace. The manufacture, distribution, dispensation, possession, sale, or use of illegal drugs or alcohol by contractors while on City Premises is prohibited.   Contractor shall comply with all the requirements and procedures set forth in the Mayor's Drug Abuse Detection and Deterrence Procedures for Contractors, Executive Order No. 1-31 ("Executive Order"), which is incorporated into this Agreement and is on file in the City Secretary=s Office.

(2)   Before the City signs this Agreement, Contractor shall file with the Contract Compliance Officer for Drug Testing ("CCODT"):

(a)   a copy of its drug-free workplace policy,

(b)   the Drug Policy Compliance Agreement substantially in the form set forth in Exhibit "D," together with a written designation of all safety impact positions and,

(c)   if applicable (e.g. no safety impact positions), the Certification of No Safety Impact Positions, substantially in the form set forth in Exhibit "E."

If Contractor files a written designation of safety impact positions with its Drug Policy Compliance Agreement, it also shall file every 6 months during the performance of this Agreement or on completion of this Agreement if performance is less than 6 months, a Drug Policy Compliance Declaration in a form substantially similar to Exhibit "F." Contractor shall submit the Drug Policy Compliance Declaration to the CCODT within 30 days of the expiration of each 6-month period of performance and within 30 days of completion of this Agreement. The first 6-month period begins to run on the date the City issues its Notice to Proceed or if no Notice to Proceed is issued, on the first day Contractor begins work under this Agreement.

(3)   Contractor also shall file updated designations of safety impact positions with the CCODT if additional safety impact positions are added to Contractor's employee work force.

(4)   Contractor shall require that its subcontractors comply with the Executive Order, and Contractor shall secure and maintain the required documents for City inspection.

J.   Title Transfer

Upon the City's acceptance of the MAAML vehicle, Contractor shall transfer title to the MAAML vehicle to the City immediately upon delivery of the vehicle to the City. The City shall have no responsibility for damage to the unit or its contents until delivery of the unit to the City and until transfer of title has occurred.

K.   Use of Work Products

The City shall own as proprietary information all MAAML generated data. Under no circumstances may Contractor issue any articles, publications, press releases or other written or oral statements or documents concerning the MAAML data, vehicle or project without the prior written consent of the Director.

L.   Warranty

Contractor shall provide the following warranty:

1.   Contractor warrants the MAAML vehicle and its components, including, but not limited to, all of its parts, labor, instrumentation, software, and hardware in its entirety for one (1) year after acceptance of the vehicle by the Director and after title is transferred to the City (the "Warranty Period"), to include the proper functioning and interoperability of all components according to the requirements in Exhibit "A", any documentation provided to the City regarding the MAAML vehicle or project, and to the terms of this Agreement. During the Warranty Period, the Contractor must replace and/or upgrade any component of the vehicle, software or hardware that does not support the City's requirements as stated in Exhibit "A" or is no longer useable as a result of incompatibility with other components. Replacement shall be at no additional cost to the City, whether for equipment, labor, testing, freight, or any other charges.

2.   Enduring throughout the life of this Agreement, including renewals, Contractor further warrants:

(a)   That it shall perform all work in a good and workmanlike manner, meeting the standards of quality prevailing in Harris County, Texas for work of

this kind. Contractor shall perform all work using trained and skilled persons having substantial experience performing the work required under this Agreement.

(b)   That with respect to any deliverables it furnishes:

  (1)   To the best of its knowledge all items are free of defects in title, design, material and workmanship; and

  (2)   No item or its use infringes any patent, copyright, or proprietary right.

(c)   That Contractor shall provide the City with at least two (2) copies of the appropriate User's Manuals for each instrument or relevant piece of equipment purchased as well as all materials (including, but not limited to, documentation and manuals) that fully describe the MAAML vehicle or its operation and usage as developed or modified by Contractor under this Agreement, including full documentation of all MAAML software provided by Contractor (the "Contractor Materials"). Contractor warrants that the MAAML unit shall perform in accordance with the Contractor Materials and the functionality described in Exhibit "A" to this Agreement.

3.   Third Party Software Warranty. Contractor shall provide the City with warranties, if any, provided by the licensor of the third party software licensed to City under this Agreement. Contractor shall assist the City in any warranty claims against such manufacturers related to the software provided pursuant to such warranty terms during the term of this Agreement and the manufacturer's

warranty period. Contractor shall also assist the City in coordinating with manufacturer's technical support to ensure that any replacement software is obtained from the manufacturer during manufacturer's warranty period and the term of this Agreement

4. Third Party Hardware Warranty. Contractor shall provide the City with the warranties, if any, provided by the manufacturer of all third party hardware purchased for the City under this Agreement. Contractor shall assist the City in any warranty claims against such manufacturers related to the hardware provided pursuant to such warranty terms during the term of this Agreement and the manufacturer's warranty period. Contractor shall also assist the City in coordinating with manufacturer's technical support to ensure that any replacement parts required for the repair of the hardware are obtained from the manufacturer during manufacturer's warranty period and the term of this Agreement.

IV. DUTIES OF CITY

A. Payment Terms

(1) MAAML Vehicle Purchase

The City shall pay Contractor $347,600 for the MAAML vehicle as set forth on Page 1 of Exhibit "G", plus certain other shipping and testing costs as further set forth on Page 1 of Exhibit "G" for a not to exceed cost of $440,400. The fees must only be paid from Allocated Funds, as provided below. The City shall pay 10% of the $440,400 ($44,040) thirty days after issuing the Notice to Proceed. The City shall pay $176,160 ninety (90) days after issuing the Notice to Proceed. The remaining amount not to exceed $220,200 shall be paid upon delivery of the completed MAAML vehicle to the City, acceptance of the MAAML vehicle by the Director and

title transfer of the vehicle to the City. The City shall pay on the basis of invoices submitted by Contractor and approved by the Director, showing the services performed and the attendant fee. The City shall pay Contractor within 30 days of the receipt and approval of the invoices.

(2)   Support and Consumables – Year 1 Following Acceptance

The City shall pay Contractor for consumables, spare parts and miscellaneous hardware in accordance with the prices set forth in Section II of Exhibit "G". Contractor shall in turn distribute appropriate payments to all third party vendors supplying parts and services. Contractor shall be timely in its payments to such third party vendors. Ongoing costs, whether as a result of services provided directly by the Contractor, or provided through third party vendors, shall not exceed the amounts listed in Section II of Exhibit "G". Contractor shall make new releases of its AIM System Software available periodically that included major significant technical updates and functional improvements without further cost to the City.

(3)   Aim Annual Services/Extended Warranties – Renewal Years 2-5

If the City renews this Agreement for years 2 through 5, then for each renewal year, the City shall pay Contractor for the Aim Annual Services and for the extended warranties at the monthly prices set forth in Section III of Exhibit "G". However, no payments shall be due or owing from the City for Aim Annual Services or extended warranties before one (1) year from the City's acceptance of the MAAML vehicle.

B.   Limit of Appropriation

(1)   The City's duty to pay money to Contractor under this Agreement is limited in its entirety by the provisions of this Section.

(2)   In order to comply with Article II, Sections 19 and 19a of the City's Charter and Article XI, Section 5 of the Texas Constitution, the City has appropriated and allocated the sum

of $513,182.00 to pay money due under this Agreement (the "Original Allocation"). The executive and legislative officers of the City, in their discretion, may allocate supplemental funds for this Agreement, but they are not obligated to do so. Therefore, the parties have agreed to the following procedures and remedies:

(3)   The City makes a supplemental allocation by sending a notice signed by the Director and the City Controller to Contractor in substantially the following form:

"NOTICE OF SUPPLEMENTAL ALLOCATION OF FUNDS"

TO: [Name of Contractor]

FROM: City of Houston, Texas (the "City")

DATE: [Date of notice]

SUBJECT: Supplemental allocation of funds for the purpose of the"[title of this Agreement]" between the City and (name of Contractor) countersigned by the City Controller on (Date of Countersignature) (the "Agreement").

I, (name of City Controller), City Controller of the City of Houston, certify that the supplemental sum of $_____, upon the request of the below-signed Director, has been allocated for the purposes of the Agreement out of funds appropriated for this purpose by the City Council of the City of Houston. This supplemental allocation has been charged to such appropriation.

The aggregate of all sums allocated for the purpose of such Contract, including the Original Allocation, and all supplemental allocations (including this one), as of the date of this notice, is $_____.

                                        SIGNED:

                                        (Signature of the City Controller)
                                        City Controller of the City

REQUESTED:

(Signature of the Director)
Director

(4)   The Original Allocation plus all supplemental allocations are the Allocated Funds. The City shall never be obligated to pay any money under this Agreement in excess of the Allocated Funds. Contractor must assure itself that sufficient allocations have been made to pay for services it provides.   If Allocated Funds are exhausted, Contractor=s only remedy is suspension or termination of its performance under this Agreement, and it has no other remedy in law or in equity against the City and no right to damages of any kind.

C.   Taxes

The City is exempt from payment of Federal Excise and Transportation Tax and Texas Limited Sales and Use Tax. Contractor's invoices to the City must not contain assessments of any of these taxes. The Director will furnish the City=s exemption certificate and federal tax identification number to Contractor if requested.

D.   Method of Payment - Disputed Payments

If the City disputes any items in an invoice Contractor submits for any reason, including lack of supporting documentation, the Director shall temporarily delete the disputed item and pay the remainder of the invoice. The Director shall promptly notify Contractor of the dispute and request remedial action.   After the dispute is settled, Contractor shall include the disputed amount on a subsequent regularly scheduled invoice or on a special invoice for the disputed item only.

V. TERM AND TERMINATION

A.   Agreement Term

This Agreement is effective on the Countersignature Date and remains in effect for one (1) year, unless sooner terminated under this Agreement.

B. Renewals

If the Director, at his or her sole discretion, makes a written request for renewal to Contractor at least 30 days before expiration of the then-current term and if sufficient funds are allocated, then, upon expiration of the initial term, this Agreement is renewed for four (4) successive one-year terms upon the same terms and conditions.

C. Termination by Either Party

Either party may terminate its performance under this Agreement if the other party defaults and fails to cure the default after receiving notice of it. Default occurs if a party fails to perform one or more of its material duties under this Agreement. If a default occurs, the injured party shall deliver a written notice to the defaulting party describing the default and the proposed termination date. The date must be at least 30 days after Contractor=s receipt of the notice. The injured party, at its sole option, may extend the proposed termination date to a later date. If the defaulting party cures the default before the proposed termination date, the proposed termination is ineffective. If the defaulting party does not cure the default before the proposed termination date, the injured party may terminate its performance under this Agreement on the termination date. The Director shall act on behalf of the City to notify Contractor of a default and to effect termination.

VI. MISCELLANEOUS

A. Independent Contractor

Contractor shall perform its obligations under this Agreement as an independent contractor and not as an employee of the City.

B.   Severability

If any part of this Agreement is for any reason found to be unenforceable, all other parts remain enforceable unless the result materially prejudices either party.

C.   Entire Agreement

This Agreement merges the prior negotiations and understandings of the Parties and embodies the entire agreement of the Parties. No other agreements, assurances, conditions, covenants (express or implied), or other terms of any kind, exist between the Parties regarding this Agreement.

D.   Applicable Laws

This Agreement is subject to the laws of the State of Texas, the City Charter and Ordinances, the laws of the federal government of the United States, and all rules and regulations of any regulatory body or officer having jurisdiction.

Venue for any litigation relating to this Agreement is Harris County, Texas.

E.   Notices

All notices to either party to the Agreement must be in writing and must be delivered by hand, facsimile, United States registered or certified mail, return receipt requested, United States Express Mail, Federal Express, Airborne Express, UPS or any other national overnight express delivery service. The notice must be addressed to the party to whom the notice is given at its address set out in Section I of this Agreement or other address the receiving party has designated previously by proper notice to the sending party. Postage or delivery charges must be paid by the party giving the notice.

F.   Non-Waiver

If either party fails to require the other to perform a term of this Agreement, that failure does not prevent the party from later enforcing that term and all other terms. If either party waives the other=s breach of a term, that waiver does not waive a later breach of this Agreement.

An approval by the Director, or by any other employee or agent of the City, of any part of Contractor=s performance does not waive compliance with this Agreement or establish a standard of performance other than that required by this Agreement and by law. The Director is not authorized to vary the terms of this Agreement.

G.   Inspections and Audits

City representatives may perform, or have performed, (1) audits of Contractor=s books and records, and (2) inspections of all places where work is undertaken in connection with this Agreement. Contractor shall keep its books and records available for this purpose for at least 2 years after this Agreement terminates. This provision does not affect the applicable statute of limitations.

H.   Enforcement

The City Attorney or his or her designee may enforce all legal rights and obligations under this Agreement without further authorization. Contractor shall provide to the City Attorney all documents and records that the City Attorney requests to assist in determining Contractor's compliance with this Agreement, with the exception of those documents made confidential by federal or State law or regulation.

I.   Ambiguities

If any term of this Agreement is ambiguous, it shall not be construed for or against any party on the basis that the party did or did not write it.

J.   Survival

Contractor shall remain obligated to the City under all clauses of this Agreement that expressly or by their nature extend beyond the expiration or termination of this Agreement, including but not limited to, the indemnity provisions.

K.   Contractor Debt

IF CONTRACTOR, AT ANY TIME DURING THE TERM OF THIS AGREEMENT, INCURS A DEBT, AS THE WORD IS DEFINED IN SECTION 15-122 OF THE HOUSTON CITY CODE OF ORDINANCES, IT SHALL IMMEDIATELY NOTIFY THE CITY CONTROLLER IN WRITING. IF THE CITY CONTROLLER BECOMES AWARE THAT CONTRACTOR HAS INCURRED A DEBT, SHE SHALL IMMEDIATELY NOTIFY CONTRACTOR IN WRITING. IF CONTRACTOR DOES NOT PAY THE DEBT WITHIN 30 DAYS OF EITHER SUCH NOTIFICATION, THE CITY CONTROLLER MAY DEDUCT FUNDS IN AN AMOUNT EQUAL TO THE DEBT FOR ANY PAYMENTS OWED TO CONTRACTOR UNDER THIS AGREEMENT, AND CONTRACTOR WAIVES ANY RECOURSE THEREFOR.

SCOPE OF SERVICES

A Fully Integrated
Mobile Ambient Air Monitoring Laboratory

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1.0   Overall Scope of Services

Contractor shall provide a fully integrated Mobile Ambient Air Monitoring Laboratory (MAAML) possessing the following key features and functionalities and to be delivered in the following fashion:

- This is a complete, turnkey project for a fully integrated mobile monitoring system. It can be used immediately upon delivery.
- The monitoring instruments will include meteorological monitors, gas chromatograph (GC) for analysis of trace levels of volatile organic compounds (VOC) in ambient air, and associated supporting equipment.
- The GC system shall be capable of analyzing a very wide range of compounds, including both highly reactive VOC (HRVOC) and organic air toxics, without using a liquid cryogen for the sample cold trap. This will require the GC with dual columns controlled through a Deans switch. For definitive identification of air toxics, the GC channel for heavier compounds will be equipped with a mass spectrometer detector (MSD) with a searchable mass spectrum library.
- The GC will be configured for dual operational modes – automatic continuous sampling and manual intermittent sampling. Its configuration will also accommodate quality assurance and quality control (QA/QC) procedures using blank, daily calibration verification standard, lab check standard, and retention time standard.
- The monitoring data will be automatically transmitted to a central computer through wireless communication. The monitoring results of air pollutants will be combined with wind conditions, MAAML locations, and surrounding map information to be presented by data visualization software. The visualized data presentation will be accessible by both the MAAML crew and technical staff in the office in real-time. The visualized data presentation will include various charts of pollutants levels, time series plots, wind trajectory plots, and pollutant-wind direction scatter plots. These online analytical tools are designed to assist technical staff to analyze the data. The data processing, analysis, and visualization software will allow the city to use the monitoring data in an automated, streamlined manner and to make the best return on its investment.
- The system is unlike any other in the country and the work will be completed by a team of highly qualified professionals experienced in similar complicated, integrated ambient monitoring systems.

2.0 SCOPE OF WORK (MAAML PROCESS/CONTROL DIAGRAM/INTERIOR LAYOUT)

2.1   Process Description and Control Diagram

Contractor has designed a fully integrated mobile ambient air monitoring laboratory (MAAML) that will meet the city's needs. Figure 1 provides a schematic of the system Contractor agrees to deliver.
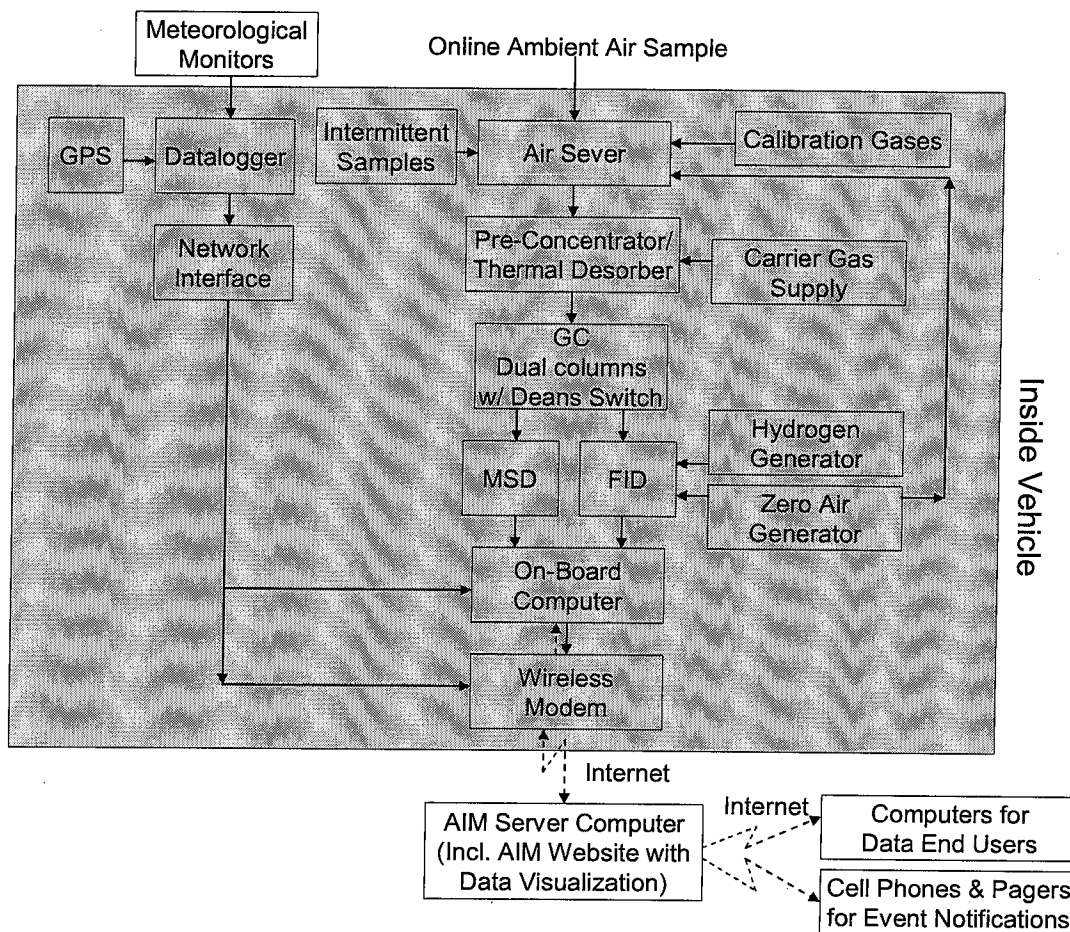

Figure 1 – Schematic of Proposed System

As the vehicle moves to a location of interest, the coordinates of the location will be determined by the GPS and automatically logged in the datalogger. After the monitoring crew properly orients the wind direction monitor, valid meteorological data (wind direction, wind speed, ambient temperature, relative humidity, and barometric pressure) will be continuously monitored and logged as 5-minute average values. The vehicle location and the meteorological data will be transmitted through a wireless modem to Providence Engineering's proprietary Active and Intelligent Monitoring (AIM) Server Computer for graphic presentation of current monitoring vehicle location on a map, meteorological data summary, wind back-

trajectories, and pollutant scatter plots for data analysis. These data visualization tools are effective in analyzing potential locations of air pollution sources.

Ambient air sample will be drawn by the Air Server at a specified rate. Excess moisture in the sample will be removed by a membrane based dryer with minimal sample loss. The dry sample is then collected in an electrically cooled, cryogen-free cold trap in the Pre-Concentrator/Thermal Desorber (TD). The sample is concentrated in the cold trap to achieve high sensitivity for very low concentrations of air toxics. After desired amount of sample is collected, the TD will rapidly heat up the trap to desorb the sample and inject the sample into the Gas Chromatograph (GC). In order to accurately analyze a wide range of compounds from very light HRVOCs to common air toxics, the GC is configured with dual columns, one column is suitable for the light compounds and the other for heavier compounds. The split between the two columns is accomplished by a Deans Switch. After the separation by respective GC columns, the light compounds will be detected by a Flame Ionization Detector (FID) and the heavier compounds will be detected by a Mass Spectrometer Detector (MSD). The FID and MSD signals will be processed by the GC software resided in the on-board computer to yield the concentrations of air pollutants.

The on-board computer will contain GC software from the GC manufacturer to control the operation of entire GC train starting from the Air Server to the detectors. The software will acquire the analytic signals and process them to yield final results. The software will include MS library for compounds identification or confirmation. The hard drive of the on-board computer will store the monitoring data, providing short-term data storage redundancy to the data transmitted and stored in the AIM database.

The output data of the GC analysis will be parsed by a computer program as part of the AIM system, transmitted through the wireless modem to the AIM Server, saved in a database resided in the AIM Server, and graphically presented on the AIM webpage when an end user accesses the AIM website. The AIM website access can be password restricted. If desired, the AIM system will also automatically send a notification to designated personnel when a monitored parameter exceeds a pre-determined level (e.g., 1,3-butadiene concentration exceeds its ESL). The notification can be in the form of email, paper, or text massage in cell phone. When a person receives automatic notification, he/she can logon the AIM website for detailed monitoring data and online, near real time analytic tools such as wind-back trajectory and pollutant scatter plots.

Other items shown in Figure 1 include hydrogen generator to supply pure hydrogen for the FID as fuel, zero air generator to supply contaminant-free air for both FID as combustion air and for the sampling/analysis system as blank sample, supply of carrier gas (helium gas in a cylinder), and various calibration gases in canisters. The City of Houston may adopt calibration standards similar to the TCEQ ozone precursor monitoring system, which include Calibration Verification Standard (CVS), Laboratory Check Standard (LCS), and Retention Time Standard (RTS).

Providence Engineering recommends the following calibration approach. Instrument quality control samples and calibrations will be run using three different standard gas mixes, a 15 L canister of CVS made up of 15 components at a 50 ppb concentration, a 15 L (or 6 L) canister of LCS with the same composition as CVS from another manufacturer at a 10 ppb concentration and a 15 L (or 6 L) canister RTS made up of 44 components at a 10 ppb concentration.

The canisters will be prepared in the City lab using respective standard gas cylinders containing 1 ppm of each component, and used for the distribution of the standard gases in the mobile laboratory. The canisters will be humidified using 100-150 micro liters of deionized water injected directly into the canister prior to the transfilling of the standard gas and zero air for the proper dilution. The humidification has shown to be beneficial for minimizing retention time shifts between the ambient air sample and the dry standard. The canisters will be transported to the MAAML for use.

A five point initial calibration using levels 1, 2, 5, 10 and 25 ppb will be performed by Providence Engineering. During normal operational periods, this multi level calibration will be performed every time

the MSD is re-tuned. The initial 50 ppb standard gas is diluted inside the Markes UNITY thermal desorber by setting the split ratio for the five different concentrations. The RTS check will be performed every two weeks or every time the vehicle is deployed to a new location in the field to help determine and correct for retention time shifts. The CVS is performed daily at 50 ppb level through the Markes UNITY split setting to verify the instrument stability. A LCS is performed every two weeks or every time the vehicle is deployed in the field to verify all the instruments including the preconcentrator and air sampler is functioning correctly. Based on the 40 minute instrument sampling rate of 50 milliliters per minute each 15 L cylinder will last approximately one week if a standard is run once each day. Providence Engineering expects a lower sampling rate and a longer lasting time.

There are supporting components not shown in Figure 1, but are essential to the system. The supporting

components include a vehicle with air conditioning, generators to power the monitoring system, and mast for the

meteorological equipment.

2.2   SYSTEM FEATURES

The system is a one-of-a-kind system, and offers the following key features.

Integration – With this system, Providence Engineering is offering a fully integrated solution. Vehicles and analyzers are available as components in the marketplace for various purposes. Until they are integrated into a true "system", they often do not deliver the desired results, cause significant frustration, or result in low level of utilization or effectiveness of the expensive investment. The integration requires thorough understanding of the project objectives, rigorous engineering design, technological "know-how", domain knowledge, and an integration enabler. Providence Engineering's integration enabler is its proprietary AIM system. The AIM system is a field-tested, effective system for applications similar to the one that City of Houston is seeking. It "glues" the components into a seamless system. When the Providence Engineering's MAAML is delivered, it will be operational and can not only generate monitoring data, but will also help the users better understand the data and easily draw inferences and conclusions. The City of Houston can immediately use it for the intended purpose without additional effort other than basic training on the system.

Automation and Intelligence – Typically, a large amount of data is generated by an air monitoring system. Unless the monitoring data is organized and presented visually in the proper context, people will not make the best use of the monitoring data. The AIM system automates the process of turning the raw monitoring data into the visual form that environmental personnel can easily understand and relate to other relevant factors. The AIM system can be designed to operate the sampling and analytic instruments automatically under various pre-determined criteria (e.g., collecting and analyzing samples only when the wind is from certain direction). Notifications and analyzer calibrations can also be automated with complex logical requirements based on real time situations. This automation and intelligent design has resulted in significant reduction in manual work, better system performance, and high level of data usability.

Real-time Web-based Access – One of the goals of an air monitoring unit is to be able to identify air pollution episodes so that response action can be initiated promptly. Insufficient data or delayed notifications can some times result in missed opportunities for controlling potential air pollution episodes. The proposed system offers fully integrated and automated operation of the MMU and generates real-time data over the Internet with web-based access thus allowing the responsible authorities to identify and respond to potential air pollution episodes in a timely manner.

Versatility and Flexibility – The analytic instruments and configurations proposed by Providence Engineering as in Figure 1 offer the City very high level of versatility and flexibility. By using the dual channel configuration, the GC system will cover virtually all volatile organic compounds from very light

HRVOCs to near semi-volatile air toxics. It is noted that the list of compounds in appendix X of the RFP contains compounds that are not volatiles and will not be part of the reporting list for this project. The use of MSD for the heavier channel provides powerful compound identification capability that is uncommon in the ambient air monitoring field. The use of the light channel with FID not only facilitates separation of light compounds, but also avoids the weakness of MSD in the mass range overlapped with permanent gases in the air. The system provides flexibility in which the Deans Switch cut time can be moved to maximize the utilization of MSD's specificity in positively identifying compounds.

Data Analysis and Visualization Tools - The AIM™ System offers several tools that allow for more efficient and effective utilization of the monitoring data. The wind direction scatter plot and back trajectory are two simple but useful tools that add further value to the monitoring efforts of the MAAML. In general, the web-based interface of the AIM™ System allows access to the following tools over the Internet.

- Quick View
  - GC/MS Run Data Bar Chart
  - Component Concentration Time-Series Charts
  - Wind Speed and Direction Bar Chart
  - Temperature and Relative Humidity Chart
- Scatter Map
- Wind Trajectory
- Export Data

Figure 2 through Figure 6 show the proposed functionality using screenshots of the AIM^{TM} software system.
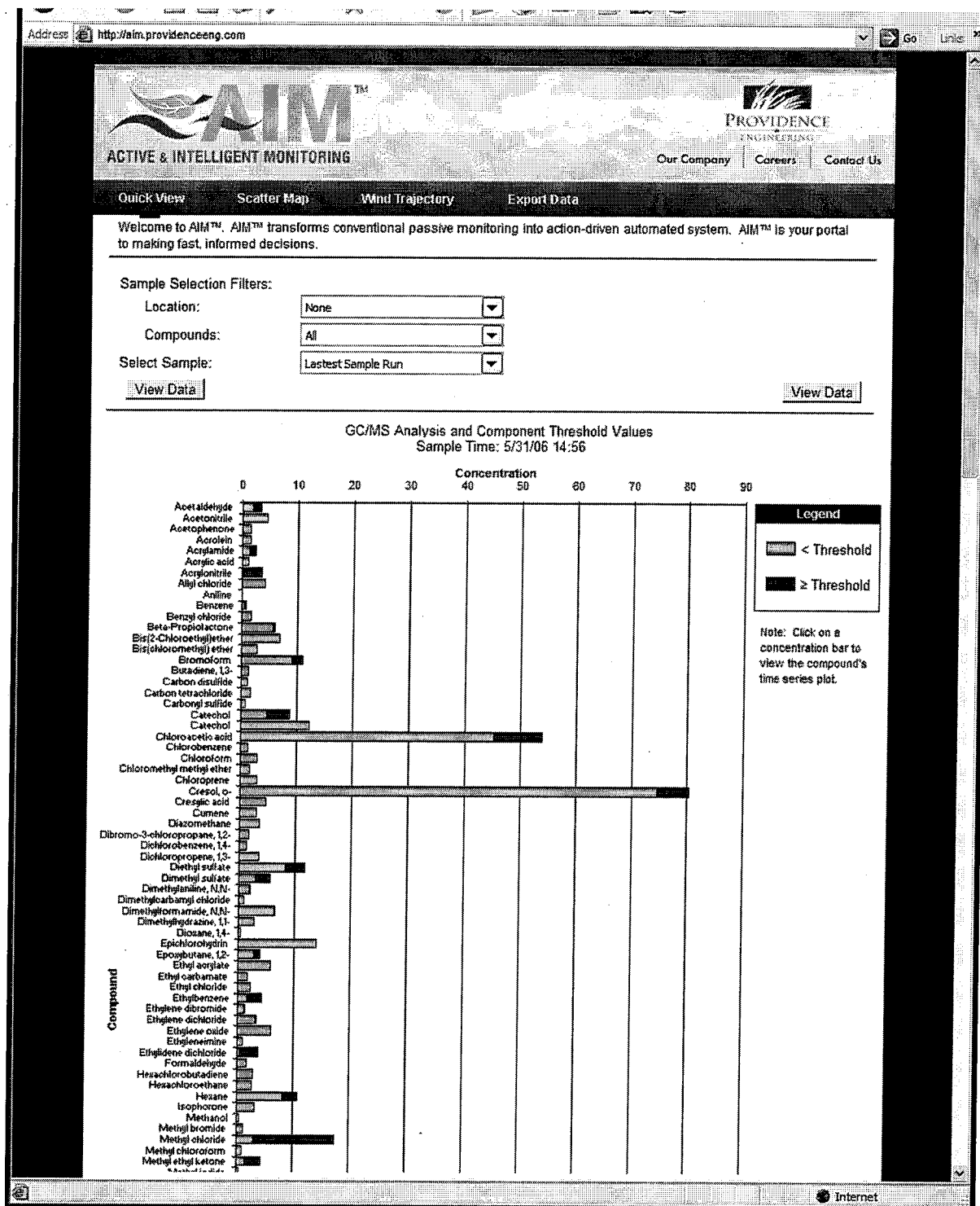
Figure 2 - Quick View – GC/MS Run Data Bar Chart is a dashboard display of the real-time and historical concentration of pollutants in bar charts. The clickable bars can be used to drill down into individual components in time-series charts (See Figure 2).
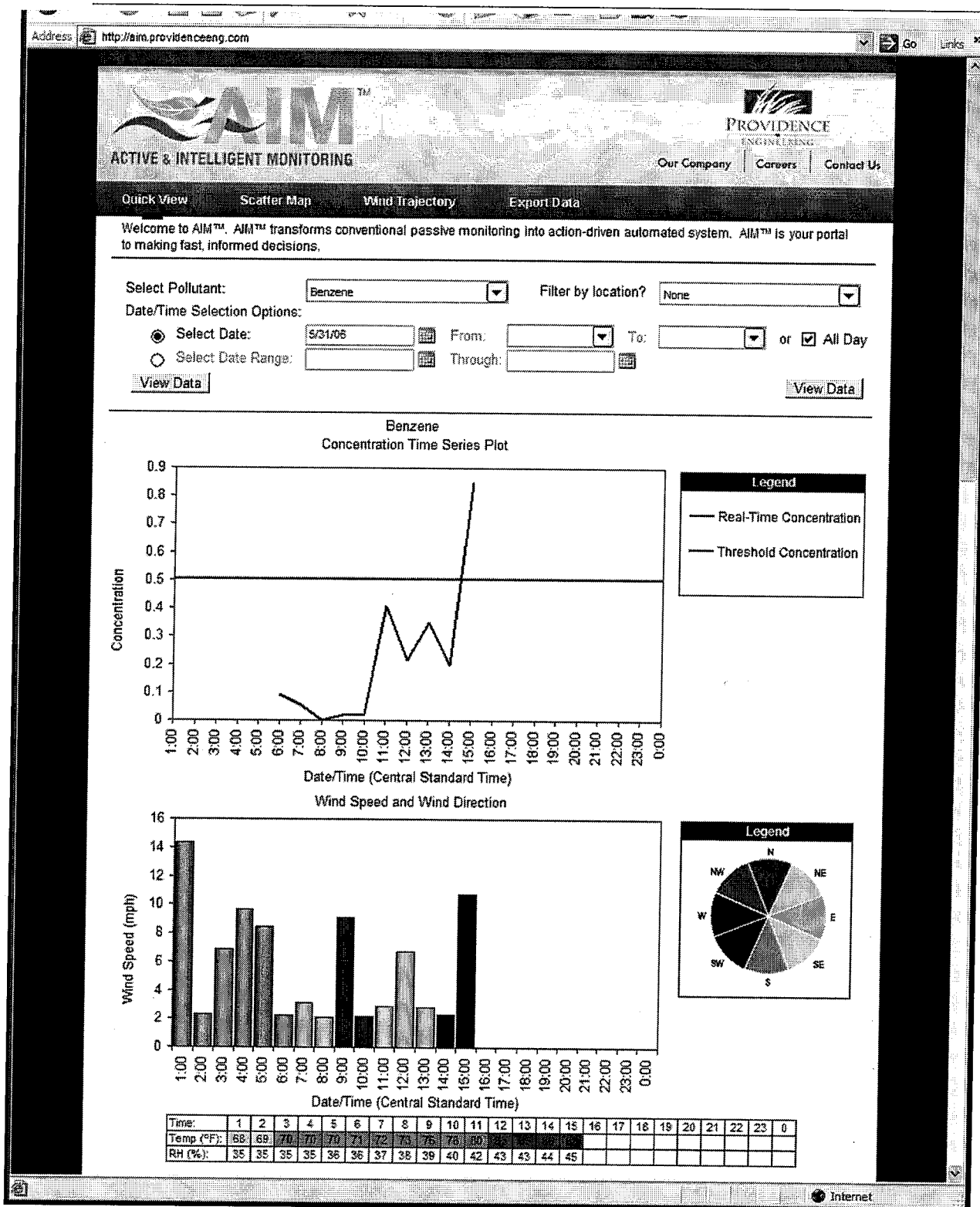
Figure 3 - Quick View – Component Concentration Time-Series Charts are time-series charts, wind speed and wind direction in color coded bar charts, temperature and relative humidity charts.
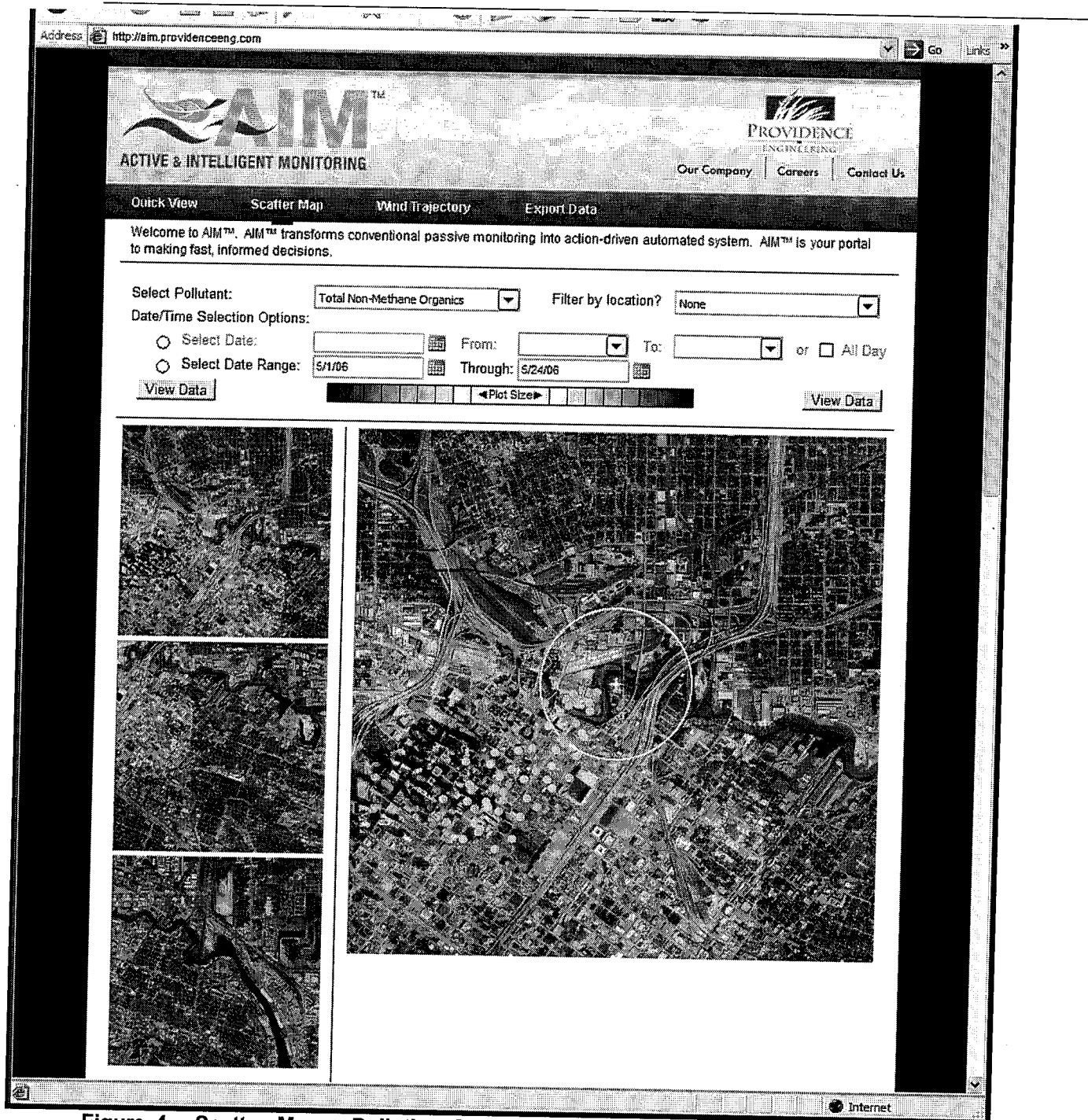
Figure 4 - Scatter Map – Pollution Scatter Plot displays the pollutant concentration and wind vector from the origin (MAAML location) over a period of time. The plot is displayed on aerial photographs and can be used as a tool to diagnose trends and problem locations over a period of time.
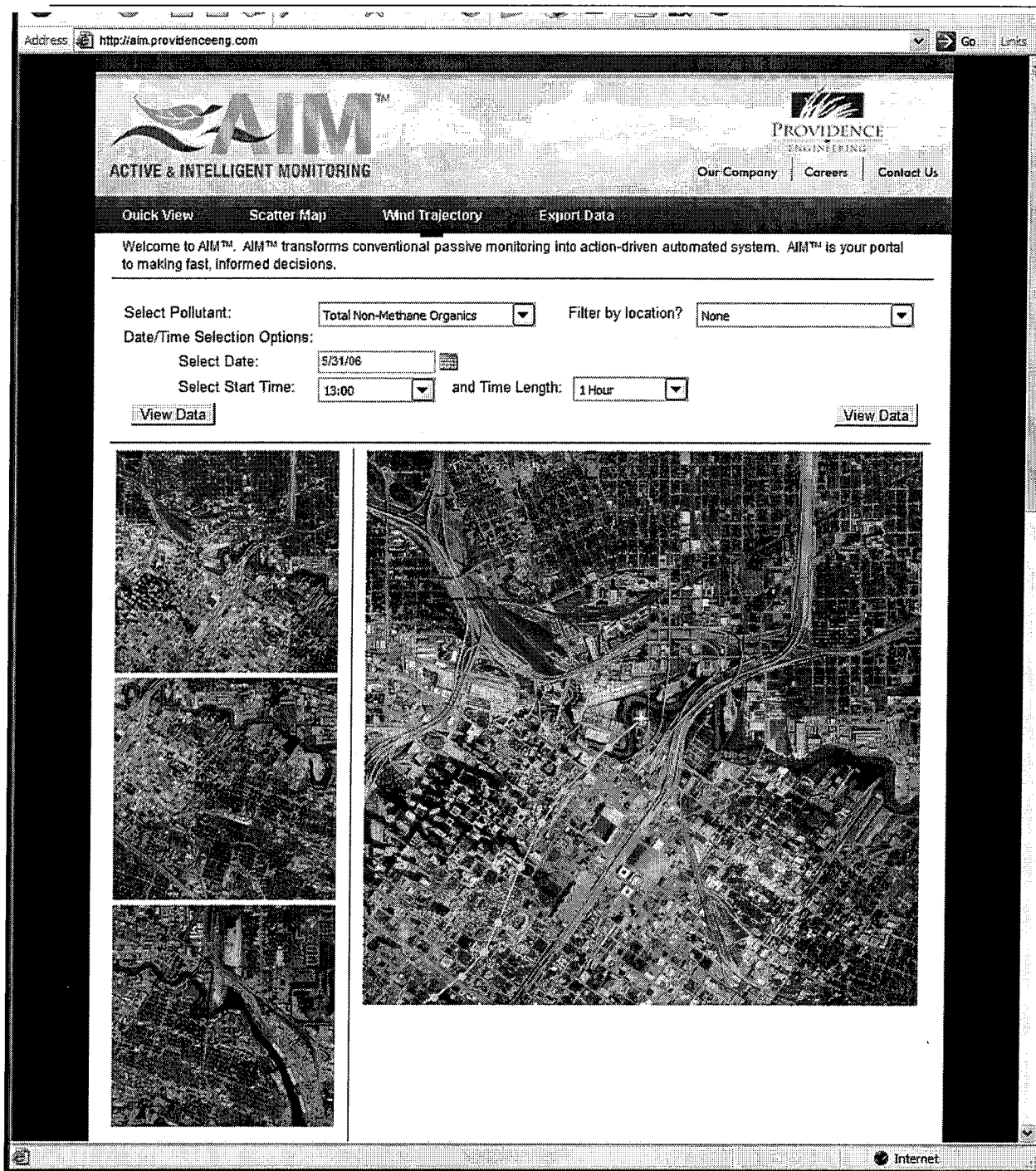
Figure 5 - Wind Trajectory – Wind Back-Trajectory Plot is a mapping tool that computes and displays wind back-trajectories on aerial photographs. This tool can be used to analyze source-receptor relations based on a specific time.
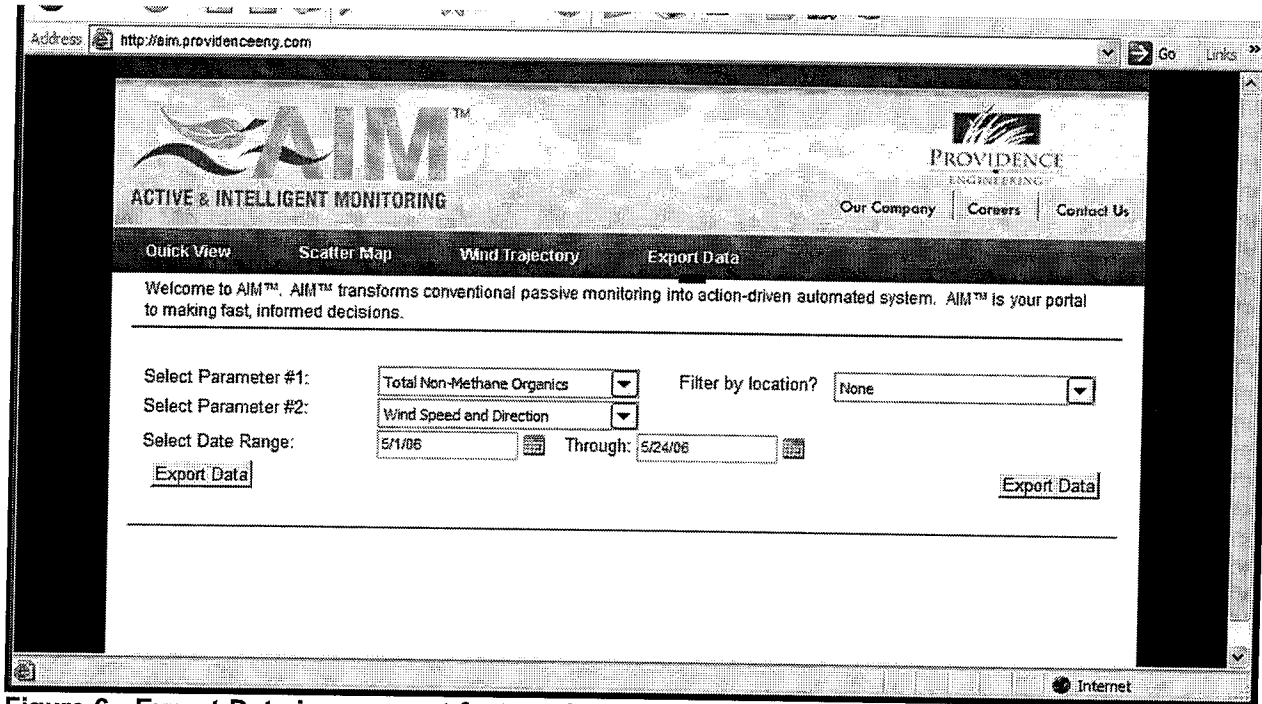
Figure 6 - Export Data is an export feature that can be used to export data from the AIM webpage in Microsoft Excel format for further analysis.

2.3 Scope of Supplies and Equipment Specifications

To deploy a complete solution as described in Section 2 and Section 3 for the ambient air monitoring needs of the City, Providence Engineering shall provide the equipment and the AIM software system described below.

2.3.1   Proposed Equipment

The equipment components of the system are included in this section. Key features of each piece of equipment are provided in this section.

2.3.2   Vehicle

A majority of the equipment described in this section will be contained in a vehicle that is custom designed for this project. The details specifications of this vehicle are described below. Figure 7 shows a picture of the vehicle.
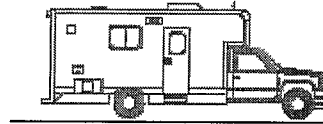

Figure 7 - Vehicle – ENG Mobilab Model 215D-01

The features of the vehicle are listed below
+ Bright white color
+ 15' Lab Area
+ 176" Wheel Base
+ 14,050 LB. GVWR
+ Diesel Powered Box Van
+ Automatic transmission - 4-speed overdrive
+ Bench space for 2 major instruments.
+ Interior dimensions 180"L x 84"H x 90"W plus 30" cabover compartment
+ Steel cross-members with aluminum upper frame construction, prepainted 040" aluminum skin.
+ Side and rear entry doors with fixed, tinted windows
+ Side fold up stairs
+ Windows in lab area, 2 @ 30"W X 22"H tinted sliding windows with screens.
+ Interior finish package, including no-wax vinyl floor, Marlite-covered wall and ceiling panels, insulation in walls
+ Instrument benches with Chem-surf countertop. Aircraft grade track & hold down system for instruments.
+ Data system desk with cabinet above, curb side, 35" x 28".
+ Stabilizing jacks, front & rear, 12 VDC operation.
+ Air conditioner/heaters, roof-mounted, (13,500/5,600 BTU).
+ Diesel-powered generator, 2@ 7.0 kW air-cooled (120 VAC) with remote start/stop on control panel. Operate from 55 gallon fuel tank
+ Auxiliary batteries, 2 @ 105 APH deep-cycle
+ Gas cylinder rack, (3@ 7" OR 2@ 9" bottle) slide-out design.
+ 4 @ 1/4" stainless tubing gas distribution manifolds to bench area.

+   Faucet mounted eyewash and hand-held shower, first aid kit, ABC fire
extinguishers (2).

2.3.3   Retractable Met Tower

A retractable meteorological tower (or mast) is proposed for this project. Figure 8 provides a picture of the proposed meteorological tower. Will-Burt's Standard Duty Masts are pneumatic and used to support a variety of lightweight antennas at up to 34 ft (10.3 m). The mast is a series of graduated extruded aluminum tubes that nest one inside another. It is extended pneumatically by an air compressor as part of the system.

Figure 8 - Will-Burt Standard Commercial Mast

The key features of the Will-Burt Standard Commercial Mast provided by the manufacturer are described below.

+   Free-standing unit so guy lines are not needed.
+   High strength, heat-treated aluminum alloy tubes and collars for long, dependable life.
+   Two full length external keys on mast sections and the collars have matching machined key ways which maintain directional azimuth.
+   Each tube and collar is protected by low friction synthetic bearings for smooth operation and long life.
+   The bumpers are designed to reduce shock on extension and retraction.
+   All exterior aluminum surfaces are anodized and sealed for long life, and the fasteners are plated stainless steel for corrosion resistance.
+   Can be rotated from the base so that re-alignment of the wind direction monitor at a new monitoring location can be easily accomplished without reaching the wind monitor.

2.3.4   Meteorological Monitors

The Met One 50.5 Sonic Wind Sensor will be used for this project for measuring the wind direction and wind-speed associated with the air sampling. Figure 9 provides a picture of the sensor.
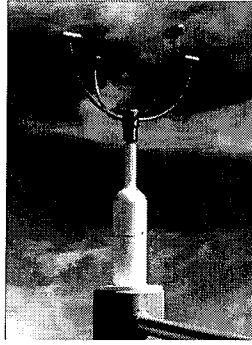
Figure 9 – Met One 50.5 Sonic Wind Sensor

According to the manufacturer, the Model 50.5 Solid State Wind Sensor offers high quality performance and has been used widely for such applications for the past two decades. Its key features are provided below.

+ No moving parts
+ Digital and analog outputs
+ Time-proven design
+ Sensor emulation
+ 16-point wind tunnel calibration

The instrument is a standard of measurement; each sensor is tested in an NIST traceable closed loop wind tunnel. Each sensor is provided with a written certification of calibration at 16 test points. The 50.5 is a continuation of the development work started with NOAA, on sonic wind sensors 25 years ago. The 50.5 design contains the same wind distortion algorithm and factoring that has been proven and accepted in applications around the world.

The MetOne 083D Relative Humidity Sensor will be used for monitoring the relative humidity associated with the air sampling. Figure 10 provides a picture of this sensor.
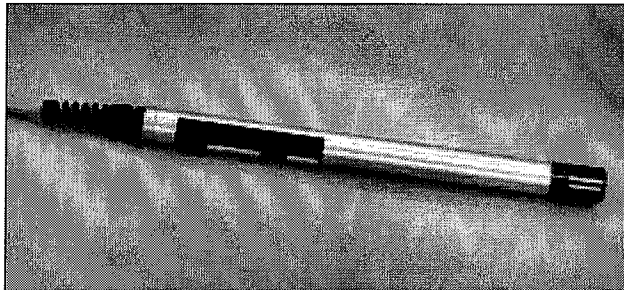
Figure 10 – Model 083D Relative Humidity Sensor

According to the manufacturer, the Model 083D sensor probe represents sensitivity, accuracy, linearity and stability not encountered with conventional relative humidity sensors. It is extremely well suited for meteorological, industrial, laboratory and other such applications. Its features include the following:

+ All solid state construction
+ Fast response of less than five seconds
+ Low power consumption of 4 mA at 12 VDC
+ Easily cleaned using distilled water

+ 0-1V output for 0-100% RH
+ Will operate from a 12 VDC battery.

Met One Temperature Sensor 060A will be used for this project. The 060A is a precision, extended range thermistor device that is used for the accurate measurement of ambient air temperature. It is particularly well suited for field applications due to its very high resistance sensitivity. Figure 11 shows a picture of this sensor. Its features are described below:

+ Rapid response time
+ Calibration traceable to NIST
+ Interchangeable without recalibration
+ High resistance values to minimize signal line resistance
+ 'Free air' suspension of thermistor bead
+ Several ranges available

The solid state multi-element thermistor produces a relatively large resistance change per degree of temperature change, allowing the use of normal signal voltages without self-heating of the sensor. When used with signal conditioning modules, the resultant output is a precise analog voltage.

Figure 11 -
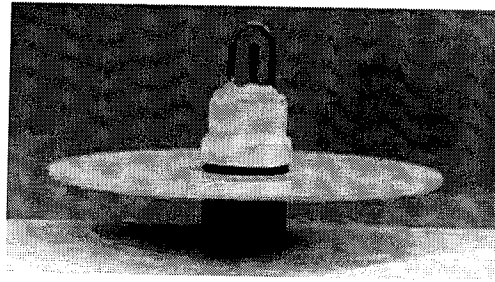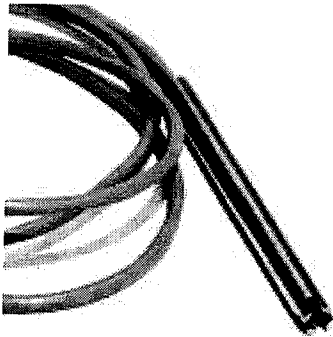
Temperature sensor 060A

The Met One 092 Barometer will be used to for barometric pressure measurements. According to the manufacturer, the 092 Barometer will convert absolute atmospheric pressure into a linear, proportional voltage, which may be used in any meteorological program. The Model 092 brings in modern digital computer technology. An on board CPU scales pressure measurements, provides temperature compensation and controls communications output. The 092 Barometer is an inherently stable device that does not require periodic service or routine recalibration. The enclosure houses a solid state pressure transducer, with linearization and amplification electronics along with a low power imbedded CPU. The Model 092 is contained within a smal polycarbonate enclosure, and may be mounted outside or inside a building or other enclosure.

Figure 12 provides a picture of the 092 Barometer. Its features include the following:

+ Compact size
+ Weatherproof enclosure
+ Digital and analog outputs
+ Permanent calibration
+ Robust construction
+ Customer configured output.
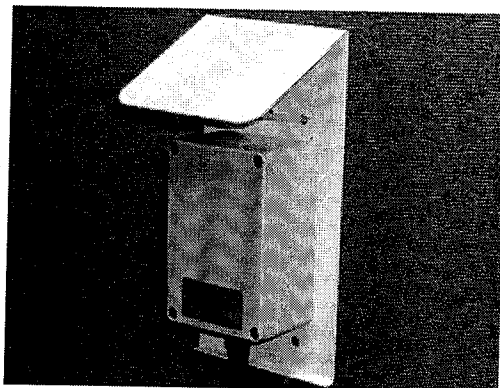
Figure 12 – Met One 092 Barometer

2.3.5   GC Analytic System

The GC analytic system refers to an instrument train with the GC at its core and supported by upstream and downstream instruments (see general configuration of these modules in Figure 1). The train consists of the following components:

+ Markes U-AIRSV Air Server accessory unit
+ Markes UNITYe Thermal Desorber
+ Agilent Model 6890N network GC with FID (210), dual EPC split/splitless inlets (112), a microfluid Dean's switch (888), pneumatics control module (309), LAN and 7683 interface
+ Agilent Model 5975 Inert MSD performance turbo EI mainframe with G3397A ion gauge controller

Figure 13 shows the analytic train. Literatures for the Markes and Agilent instruments are provided in Appendix B. Accessories included are the Agilent G1701DA MSD software and license, Agilent G1033A D.05 NIST library, Agilent G3185B quick swap accessory kit, Markes U-ASDRY dryer kit and multi channel sampler, Markes U-MFC mass flow controller assembly, Markes U-GAS01 UNITY dry gas and carrier gas pneumatic assembly, Markes U-ASPM1 pump for air server and multi channel sampler. The columns will be equivalent to PLOT and BP1 columns for analysis of the required compounds.

Figure 13. *The analytic train (from right to left: Markes Thermal Desorber, Agilent GC with FID, and Agilent MSD; not shown is Markes Air Server, which can be placed next to the Markes Thermal Desorber on the right)*

Key features of the system include:

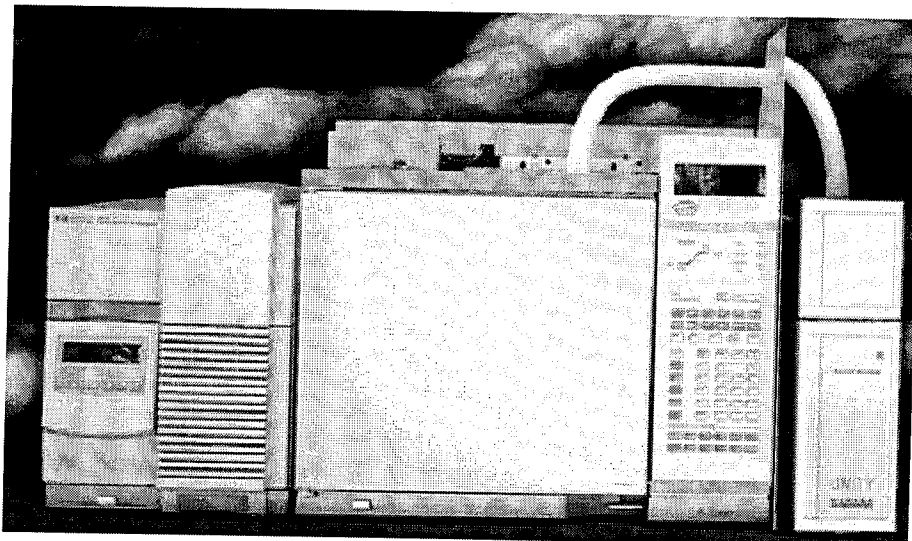✦ Cryogen-free focusing cold trap providing sample pre-concentration to achieve ppb level detection with sharp GC peaks without hassle of handling liquid cryogen.
✦ Dual-column GC with Deans Switch covering a full range of volatile organic compounds, including HRVOCs and common air toxics.
✦ MS detector for definitive compound identification.
✦ Sample stream split allowing (1) a wide range of concentration level and (2) calibration check with a high concentration standard.
✦ Sample split and re-collection allowing (1) repeat analysis of the sample and (2) linearity check with only one concentration standard.

2.3.6 On-Board Computer

On-board computer/PC workstation.

Features of Desktop computer are listed below.

✦ Intel® Pentium® D 920, 2.80GHz/800MHz/2x2MB L2 cache, Dual-core or equivalent
✦ Genuine Windows® XP Professional, SP2
✦ 128MB PCIe x16 ATI FireGL V3100, Dual Monitor VGA or DVI/VGA Capable or equivalent
✦ 1GB, 667MHz, DDR2 SDRAM Memory, ECC (2 DIMMS) or equivalent
✦ C1 All SATA drives, Non-RAID, 1 drive total configuration or equivalent
✦ 16XDVD+/-RW w/Sonic Digital Media™ and CyberLink PowerDVD™ or equivalent
✦ 19 inch Flat Panel, Adjustable Stand, VGA/DVI or equivalent

2.3.7 Datalogger

Providence Engineering shall use the Campbell Scientific CR10X datalogger. The CR10X-series is a compact, modular line of dataloggers with a measurement and control module and external power supply.

The CR10X datalogger needs to be programmed for all the tasks by a special machine code language. This makes the datalogger very flexible and powerful, but also difficult to use. Providence has extensive experience in using this datalogger and can write large programs to perform complicated tasks. Figure 14 provides a picture of the CR10X.
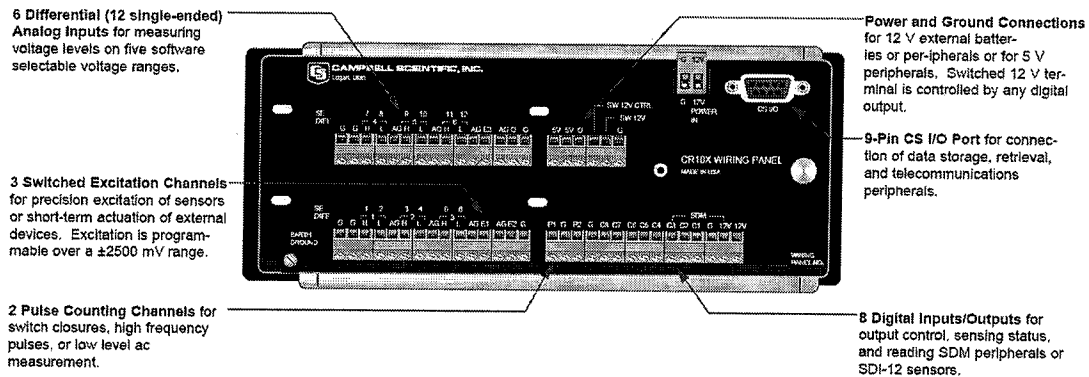
6 Differential (12 single-ended) Analog Inputs for measuring voltage levels on five software selectable voltage ranges.

3 Switched Excitation Channels for precision excitation of sensors or short-term actuation of external devices. Excitation is programmable over a ±2500 mV range.

2 Pulse Counting Channels for switch closures, high frequency pulses, or low level ac measurement.

Power and Ground Connections for 12 V external batteries or per-ipherals or for 5 V peripherals. Switched 12 V terminal is controlled by any digital output.

9-Pin CS I/O Port for connection of data storage, retrieval, and telecommunications peripherals.

8 Digital Inputs/Outputs for output control, sensing status, and reading SDM peripherals or SDI-12 sensors.

Figure 14 – Datalogger CR10X

The features of the CR10X are listed below:

✦ Designed for unattended network applications
    ✦ Consists of a measurement and control module and the CR10XWP, a detachable wiring panel
✦ Stores 62000 data points (non-volatile)
    ✦ Memory upgrades available for storing up to 1 million data points on-board (non-volatile)
✦ 32 kbytes for active and user-stored programs (non-volatile)
✦ Data format options are mixed array (default) or table
✦ Available operating systems: Mixed Array, Table, PakBus®, Modbus, ALERT
    ✦ Software support offered in LoggerNet or PC400 (full-featured) or ShortCut (programming)

The datalogger can be managed by Loggernet software. The program is edited and compiled, and then sent to the datalogger by the loggernet software. Logged data in the datalogger are polled by the Loggernet software. Loggernet does not support relational database. Providence Engineering uses customized software to bridge this gap and help transfer data from Loggernet to AIM database.

2.3.8   GPS Unit

Providence Engineering shall use the GPS16-HVS sensor as the GPS Unit for this project. The GPS16HVS consists of a receiver and an integrated antenna. This sensor receives signals from orbiting GPS satellites then uses the signals to calculate position and velocity. The GPS16-HVS can also provide a highly accurate one-pulse-per-second (PPS) output for precise timing measurements. Figure 15 provides a picture of the GPS16-HVS integrated with the CR10X datalogger.
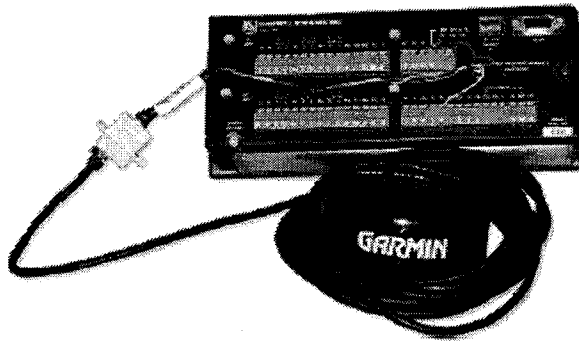
Figure 15 – GPS Unit integrated with the CR10X datalogger

Features of the GPS unit are listed below:

+ Processes data from up to 12 satellites depending on the number of satellites viewable above the horizon
+ Supports real-time WAAS or RTCM corrections that provide a 3 to 5 m position accuracy
+ Allows the datalogger clock to be set to the highly accurate GPS time
+ Provides a timing pulse (PPS) at one second intervals. The timing pulses are extremely accurate and can be used to synchronize time between the datalogger and other instruments
+ Accuracy - Position (95% typical): <15 m with GPS Standard Positioning Service (SPS); 3 to 5 m with DGPS (USCG/RTCM) correction; <3 meters with DGPS (WAAS) correction
+ Velocity: 0.1 knot RMS steady state

2.3.9   Wireless Modem

Providence Engineering shall use the Proxicast LAN-Cell Mobile Gateway for this project. The LAN-Cell is a robust 3G wireless cellular router that allows multiple PC's, laptops, webcams, PDAs, PLCs, industrial controls or other Ethernet-based devices to simultaneously utilize a single cellular wireless data account. Figure 16 shows a picture of the LAN-Cell Mobile Gateway.

Figure 16 – Proxicast LAN-Cell Mobile Gateway

The features of this wireless modem are listed below.

+ CDMA 2000 1xRTT or GSM / GPRS high speed 3G cellular data modem built-in
+ 4 port 10/100 Ethernet switch w/ auto MDIX
+ 10/100 Ethernet WAN interface (supports wired DSL, Cable, Ethernet)
+ Auto fail-over between Cellular & WAN ports
+ DHCP client & server • Dynamic DNS support • Static IP Support
+ Advanced IP routing with Network Address Translation (NAT) & Port Forwarding
+ Works with all operating systems - Windows, Mac, Linux, Solaris, etc.
+ ICSA certified IPSec-based VPN client (DES, 3DES, AES) - not just a VPN pass-through
+ ICSA certified Stateful Inspection Firewall & DoS Protection
+ Content filtering, access control & advanced routing features
+ Web/SSL & Telnet/SSH Management Consoles via LAN or WAN
+ Works with all wireless access points / WiFi - 802.11a, b, g, x / Bluetooth / Zigbee
+ Vehicle & solar power compatible - 12 VDC • Optional power cables available
+ Includes 120VAC to 12VDC power supply & external omni antenna with cable

2.3.10 Hydrogen Generator

The hydrogen generator is the Matheson Chrysalis II HYC-HPNM250 250 ccm high performance no maintenance hydrogen generator. The Hydrogen generator produces a continuous output of 99.9999% pure hydrogen using only deionized water. The hydrogen is used as fuel to support the flame ionization detector(s).

2.3.11 Zero Air Generator

The zero air generator is the Teledyne API 700 zero air generator with an internal air compressor. The zero air generator produces high purity air with hydrocarbon and carbon monoxide impurities to less than 0.1 ppm. The zero air generator will be used to supply air for blank sample runs and as fuel air to support the flame ionization detector(s). The generator has an internal air compressor. The system is designed to operate at low noise level in the lab environment so that the operators in the MAAML can carry on normal conversation.

2.3.12 Cylinders and Regulators

One UHP grade Helium cylinders (high pressure steel; large capacity) with dual stage 316L stainless steel Barstock Body, six port configuration. One 316L stainless steel diaphragm regulator will be provided for the GC/MS carrier gas. The regulator is included as part of the

MAAML supplied by Providence Engineering and the cylinder will be rented by the City of Houston from a gas supplier.

2.3.13 AIM System Software

The AIM System Software is a Web-based (open or password protected), real-time or near real-time data visualization and analysis software system specifically designed for ambient air quality monitoring applications. The software is copyrighted and will include the following online tools:

+ Quick View – Charts monitoring data
    - GC/MS Run Data Bar Chart
    - Component Concentration Time-Series Charts
    - Wind Speed and Direction Bar Chart
    - Temperature and Relative Humidity Chart
+ Scatter Map – Analyzes and displays pollutant concentration monitoring results by wind direction in the form of a scatter plot
+ Wind Trajectory – Computes and displays wind back trajectories overlaid on aerial photographs or maps
+ Export Data – Exports data in Microsoft Excel format for additional analyses

The above tools are supported by a SQL database and proprietary application programs for various data handling and analysis functions.

During the term of the Agreement, including any renewals, Providence Engineering shall host the monitoring data in the AIM Server in Providence Engineering's office. Therefore, this offer does not include software license for the City of Houston to install the software in its computer(s). The City of Houston personnel can use the system with common web browser software without acquiring any other software.

2.5   Proposed MAAML Layout
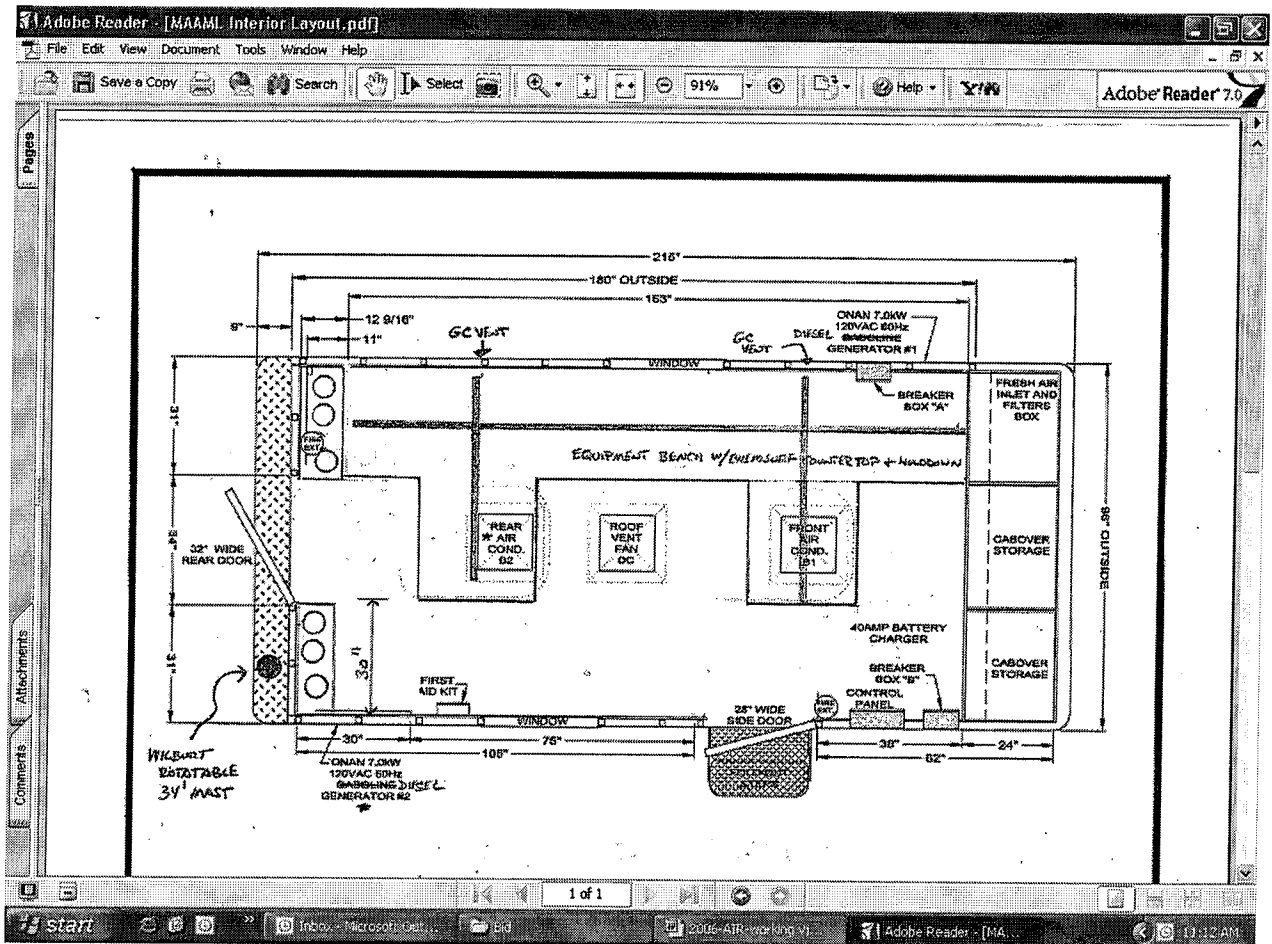
2.6   Proposed Services

After the commissioning of the MAMML, Providence Engineering would be available for on-going support needed for the maintenance and effective operation of the MAMML. As a part of ongoing services, Providence Engineering proposes to provide the following support and services:

+ Monitoring data and Web-hosting
+ Data backup and data storage
+ Telephone support to trouble-shoot issues related to AIM data flow
+ On-site support to trouble-shoot any potential issues associated with the AIM data flow

All the data generated by the MAAML will be maintained on a central computer that will be located within secure premises at Providence Engineering's Baton Rouge Office. At certain time interval, Providence Engineering will provide archived data to the City of Houston in a suitable media.

Unless specifically requested and authorized by the City of Houston, the following activities related to the MAAML operations are not in the scope of Providence Engineering's services:

+ Operation and maintenance of the mobile unit
+ GC method development other than the initial method
+ Troubleshooting other than the AIM dataflow related and issues covered by equipment warranty

EXHIBIT "B"

EQUAL EMPLOYMENT OPPORTUNITY

1.   The contractor, subcontractor, vendor, supplier, or lessee will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, or age.   The contractor, subcontractor, vendor, supplier, or lessee will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, religion, color, sex, national origin, or age.   Such action will include, but not be limited to, the following: employment; upgrading; demotion or transfer; recruitment advertising; layoff or termination; rates of pay or other forms of compensation and selection for training, including apprenticeship.   The contractor, subcontractor, vendor, supplier or lessee agrees to post in conspicuous places available to employees, and applicants for employment, notices to be provided by the City setting forth the provisions of this Equal Employment Opportunity Clause.

2.   The contractor, subcontractor, vendor, supplier, or lessee states that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, national origin or age.

3.   The contractor, subcontractor, vendor, supplier, or lessee will send to each labor union or representatives of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer advising the said labor union or worker's representative of the contractor's and subcontractor's commitments under Section 202 of Executive Order No. 11246, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4.   The contractor, subcontractor, vendor, supplier, or lessee will comply with all provisions of Executive Order No. 11246 and the rules, regulations, and relevant orders of the Secretary of Labor or other Federal Agency responsible for enforcement of the equal employment opportunity and affirmative action provisions applicable and will likewise furnish all information and reports required by the Mayor and/or Contractor Compliance Officer(s) for purposes of investigation to ascertain and effect compliance with this program.

5.   The contractor, subcontractor, vendor, supplier, or lessee will furnish all information and reports required by Executive Order No. 11246, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to all books, records, and accounts by the appropriate City and Federal Officials for purposes of investigations to ascertain compliance with such rules, regulations, and orders. Compliance reports filed at such times as directed shall contain information as to the employment practice policies, program, and work force statistics of the contractor, subcontractor, vendor, supplier, or lessee.

6.   In the event of the contractor's, subcontractor's, vendor's, supplier's, or lessee's non-compliance with the non-discrimination clause of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part, and the contractor, subcontractor, vendor, supplier, or lessee may be declared ineligible for further City contracts in accordance with procedures provided in Executive Order No. 11246, and such other sanctions may be imposed and remedies invoked as provided in the said Executive Order, or by rule, regulation, or order of the Secretary of Labor, or as may otherwise be provided by law.

7.   The contractor shall include the provisions of paragraphs 1-8 of this Equal Employment Opportunity Clause in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontractor or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance; provided, however, that in the event the contractor becomes involved in, or is threatened with litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

8.   The contractor shall file and shall cause his or her subcontractors, if any, to file compliance reports with the City in the form and to the extent as may be prescribed by the Mayor. Compliance reports filed at such times as directed shall contain information as to the practices, policies, programs, and employment policies and employment statistics of the contractor and each subcontractor.

EXHIBIT "C" - MWBE SUBCONTRACT TERMS

Engineer shall insure that all subcontracts with MWBE subcontractors and suppliers are clearly labeled "**THIS CONTRACT IS SUBJECT TO ARBITRATION ACCORDING TO THE TEXAS GENERAL ARBITRATION ACT**" and contain the following terms:

1. _____ (MWBE subcontractor) shall not delegate or subcontract more than 50% of the work under this subcontract to any other subcontractor or supplier without the express written consent of the City of Houston's Affirmative Action Director ("the Director").

2. _____ (MWBE subcontractor) shall permit representatives of the City of Houston, at all reasonable times, to perform (1) audits of the books and records of the subcontractor, and (2) inspections of all places where work is to be undertaken in connection with this subcontract. Subcontractor shall keep such books and records available for such purpose for at least four (4) years after the end of its performance under this subcontract. Nothing in this provision shall affect the time for bringing a cause of action nor the applicable statute of limitations.

3. Within five business days of execution of this subcontract, Engineer (prime engineer) and Subcontractor shall designate in writing to the Director an agent for receiving any notice required or permitted to be given pursuant to Chapter 15 of the Houston City Code of Ordinances, along with the street and mailing address and phone number of such agent.

4. As concluded by the parties to this subcontract, and as evidenced by their signature hereto, any controversy between the parties involving the construction or application of any of the terms, covenants or conditions of this subcontract shall, on the written request of one party served upon the other or upon notice by Director served on both parties, be submitted to arbitration, under the Texas General Arbitration Act (Tex. Civ. Prac. & Rem. Code Ann., Ch. 171 -- "the Act"). Arbitration shall be conducted according to the following procedures:

   a. Upon the decision of the Director or upon written notice to the Director from either party that a dispute has arisen, the Director shall notify all parties that they must resolve the dispute within thirty (30) days or the matter may be referred to mediation or arbitration.

   b. If the dispute is not resolved within the time specified, any party or the Director may submit the matter to arbitration conducted by the American Arbitration Association under the rules of the American Arbitration Association, except as otherwise required by the City's contract with American Arbitration Association on file in the Office of the City's Affirmative Action Division.

   c. Upon submittal of the matter to arbitration each party shall pay all fees required by the American Arbitration Association and sign a form releasing the American Arbitration Association and its arbitrators from liability for decisions reached in the arbitration.

   d. In the event the American Arbitration Association no longer administers Affirmative Action arbitration for the City, the Director shall prescribe alternate procedures as necessary to provide arbitration by neutrals in accordance with the requirements of Chapter 15 of the Houston City Code of Ordinances.

   e. All arbitrations shall be conducted in Houston, Texas unless the parties agree to another location in writing.

EXHIBIT "D"

DRUG POLICY COMPLIANCE AGREEMENT

I, _Rich Major_ _Sr. Managing Partner_ as an owner or officer of
  (Name) (Print/Type)   (Title)

Providence Engineering and Environmental Group LLC (Contractor)
                    (Name of Company)

have authority to bind Contractor with respect to its bid, offer or performance of any and all contracts it may enter into with the City of Houston; and that by making this Agreement, I affirm that the Contractor is aware of and by the time the contract is awarded will be bound by and agree to designate appropriate safety impact positions for company employee positions, and to comply with the following requirements before the City issues a notice to proceed:

1. Develop and implement a written Drug Free Workplace Policy and related drug testing procedures for the Contractor that meet the criteria and requirements established by the Mayor's Amended Policy on Drug Detection and Deterrence (Mayor's Drug Policy) and the Mayor's Drug Detection and Deterrence Procedures for Contractors (Executive Order No. 1-31).

2. Obtain a facility to collect urine samples consistent with Health and Human Services (HHS) guidelines and a HHS certified drug-testing laboratory to perform the drug tests.

3. Monitor and keep records of drug tests given and the results; and upon request from the City of Houston, provide confirmation of such testing and results.

4. Submit semi-annual Drug Policy Compliance Declarations.

I affirm on behalf of the Contractor that full compliance with the Mayor's Drug Policy and Executive Order No. 1-31 is a material condition of the contract with the City of Houston.

I further acknowledge that falsification, failure to comply with or failure to timely submit declarations and/or documentation in compliance with the Mayor's Drug Policy and/or Executive Order No. 1-31 will be considered a breach of the contract with the City and may result in non-award or termination of the contract by the City of Houston.

_12-11-06_
Date

Rich Major
Contractor Name

(signature)
Signature

SR. MANAGING PARTNER
Title

EXHIBIT "E"

CONTRACTOR'S CERTIFICATION
OF NO SAFETY IMPACT POSITIONS
IN PERFORMANCE OF A CITY CONTRACT

I, _Rich Major_ , _Sr. Managing Partner_ ,
      (Name)   (Title)

as an owner or officer of _Providence Engineering and Environmental Group LLC_ (Contractor)
                                    (Name of Company)

have authority to bind the Contractor with respect to its bid, and hereby certify that Contractor has no employee safety impact positions, as defined in §5.18 of Executive Order No. 1-31, that will be involved

in performing _Mobile Ambient Air Monitoring Laboratory_ .
                          (Project)

Contractor agrees and covenants that it shall immediately notify the City of Houston Director of Personnel if any safety impact positions are established to provide services in performing this City Contract.

_12-11-06_   _RICH MAJOR_
   (Date)   (Typed or Printed Name)

                                              (Signature)

                                              SR. MANAGING PARTNER
                                                    (Title)

DRUG POLICY COMPLIANCE DECLARATION

and Yousheng Zen
Managing partner

I, __Rich Major__ __Senior Managing Partner__ as an owner or officer of
    (Name) (Print/Type)   (Title)

__Providence Engineering and Environmental Group LLC__ (Contractor)
           (Name of Company)

have personal knowledge and full authority to make the following declarations:

This reporting period covers the preceding 6 months from __May 2006__ to __November__ 20__06__.

YZ
Initials
A written Drug Free Workplace Policy has been implemented and employees notified. The policy meets the criteria established by the Mayor's Amended Policy on Drug Detection and Deterrence (Mayor's Policy).

YZ
Initials
Written drug testing procedures have been implemented in conformity with the Mayor's Drug Detection and Deterrence Procedures for Contractors, Executive Order No. 1-31. Employees have been notified of such procedures.

YZ
Initials
Collection/testing has been conducted in compliance with federal Health and Human Services (HHS) guidelines.

YZ
Initials
Appropriate safety impact positions have been designated for employee positions performing on the City of Houston contract. The number of employees in safety impact positions during this reporting period is _____.

YZ
Initials
From __June 2006__ to __November 2006__ the following test has occurred
   (Start date)   (End date)

	Random	Reasonable Suspicion	Post Accident	Total
Number Employees Tested	30	O	O	30
Number Employees Positive	O	O	O	O
Percent Employees Positive	O	O	O	O

YZ
Initials
Any employee who tested positive was immediately removed from the City worksite consistent with the Mayor's Policy and Executive Order No. 1-31.

YZ
Initials
I affirm that falsification or failure to submit this declaration timely in accordance with established guidelines will be considered a breach of contract.

I declare under penalty of perjury that the affirmations made herein and all information contained in this declaration are within my personal knowledge and are true and correct.

__12-11-06__
(Date)

YOUSHENG ZENG
Managing Partner

__RICH MAJOR__
(Typed or Printed Name)

(Signature)

__SR. MANAGING PARTNER__
(Title)

EXHIBIT "G"

PRICING

I. Equipment Purchase

Item No.	Description (See Technical Proposal for Details)	Cost
1	E-N-G Mobilab Model 215D-01	151,400
2	GPS	1,200
3	Analytic system including: - Markes Air Server and UNITYe TD - Agilent 6890N GC w/ dual columns, Deans Switch, & FID - Agilent 5975 Inert MSD performance turbo - H2 generator	155,500
4	Teledyne/API zero air generator w/ build-in compressor	5,600
5	Meteorological sensors - wind direction, wind speed, temperature, relative humidity, and barometric pressure.	2,900
6	Data logging and control system	2,500
7	Wireless modem	2,000
8	AIM customization and fee	20,000
9	Regulators for He, CVS, LCS, & RTS	2,400
10	Misc. integration parts	3,600
11	LoggerNet Computer Software and License	500
	Capital Equipment Subtotal	**347,600**

Estimated Shipping Cost	9,900
Engineering, integration, & testing	60,800
System commissioning	26,100
Sales taxes (assumed to be 0% - the City's tax exemption status)	0
Total Price	**444,400**

Operating cost are not included in this budget

Support and Consumables – Year 1 (first 12 months after
II.   Acceptance)
Misc. hardware

Description	Unit Price	Unit	Qty.	Cost
GC columns	1,000	column	4	4,000
Canister for transfilled std. (15L)	1,036	canister	6	6,216
Canister transfill station	3,250	station	1	3,250
Subtotal				**13,466**

Consumables (Gases and standards)

Description	Unit Price	Unit	Qty.	Cost
Cal. Verification Std. (CVS)	1,995	cylinder	2	3,990
Lab Check Std. (LCS)	1,995	cylinder	2	3,990
Retention Time Std. (RTS)	6,795	cylinder	2	13,590
DI water for H2 generator	120	year	2	240
High Purity He Cylinder	375	cylinder	4	1,500
Subtotal				**23,310**

Warranties and Service Contracts

Description	Unit Price	Unit	Qty.	Cost
Phone company wireless service (rate based on 2 yr contract)	75	month	24	1,800
Subtotal				**1,800**

Spare Parts

Description	Unit Price	Unit	Qty.	Cost
Markes U-T503F Unitye Ozone - Precursors/Freons Cold Traps	700	trap	3	2,100
Markes C-HY010 Stainless Stainless Steel Thermal Desorption TO-17-3 Tubes pre-lacked with Hydrophobic Sorbent Beds	561	packs (10)	5	2,805
Markes U-ASPM1 Pump for Air Server & Multi-Channel Samples (115V, 50-60 Hz)	1,200	pump	1	1,200
Markes UTD-5064 Trap Alignment Tool	30	tool	1	30
Markes Z-0351 O-Ring Extraction Tool	21	tool	1	21
Met Sensor Calibration Kit	300	Cal Kit	1	300
Met Shield	200	Shield	1	200

Subtotal 6,656

Grand Total – Year 1 45,232

III.   AIM Annual Services – Agreement Renewal Years 2 through 5 (All items below shall be prorated to accommodate the agreement renewal period(s))

The services below shall begin 12 months after Acceptance.

A.   AIM Annual Services - $1,000 per month; $12,000 per renewal year.

B.   TD/GC/MS 1 year extended warranty - $791.66 per month; $9500 per renewal year.

C.   Computer equipment 1 year extended warranty - $33.33 per month; $400.00 per renewal year.

D.   Zero Air Generator 1 year extended warranty - $29.16 per month; $350.00 per renewal year.

E.   Hydrogen Generator 1 year extended warranty - $108.33 per month; $1,300.00 per renewal year.

Acceptability Criteria for MAAML Instrumentation

The following tables list the initial acceptance criteria for GC/FID/MS system.

Table 1 - GC/FID/MS Quality Control Activities

QC Check	QC Procedure	Acceptance Criteria
MDL study	Follow 40 CFR Part 136 Appendix B	FID: <0.5 ppbV-C for most target compounds MS: <0.5 ppbV for most target compounds
PFTBA - MS tune and check for leaks	Autotune	1) Must pass BFB acceptance criteria. 2) Mass/Energy % relative abundance 69-100 28-<30% 18-<10%
BFB Tune check	Trap 50 ng BFB expressed as a volume concentration under the optimized preconcentration	See Table 2
Internal Standard	Multiple component injected with each sample	50%-150% recovery compared to the passing QC sample
Calibration (linearity)	FID: Three concentrations plus a method blank	FID: Calibration curve correlation coefficient (r) ≥0.995 or RSD of RFs<20%
	MS: Five concentrations plus a method blank	MS: Calibration curve correlation coefficient (r) ≥0.995 or RSD of RFs <30%, with two exceptions up to <40%
Calibration Verificatio	Mid-level standard	70%-130% recovery compared to the

		curve for all target compounds
n Standard (CVS) – recovery and analytical drift		
Method Blank - system contribution to measurement	Humidified UHP air sampled under normal conditions	FID: 1) Target compound concentrations $\leq$2.0 ppbV-C 2) TNMHC values $\leq$20.0 ppbV-C MS: Target compound concentrations $\leq$0.5 ppbV
Laboratory Check Standard (LCS/LCSD) - accuracy and precision	Secondary source standard	Accuracy: 70%-130% recovery Precision: $\leq$25% RPD for most compounds
Retention Time Standard (RTS)	Retention time standard to optimize process methods	100% of the compounds are identified correctly RTS

Table 2 - Required BFB Key Ions and Ion Abundance Criteria

Mass	Ion Abundance Criteria[1]
50	8.0 to 40.0 Percent of m/e 95
75	30.0 to 66.0 Percent of m/e 95
95	Base Peak, 100 Percent Relative Abundance
96	5.0 to 9.0 Percent of m/e 95 (See note)
173	Less than 2.0 Percent of m/e 174
174	50.0 to 120.0 Percent of m/e 95
175	4.0 to 9.0 Percent of m/e 174
176	93.0 to 101.0 Percent of m/e 174
177	5.0 to 9.0 Percent of m/e 176

[1]All ion abundances must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120 percent that of m/z 95, based on EPA Compendium Method TO15.

Datalogger Acceptance Criteria

The datalogger should capture all analog signals as designed. The onboard computer with GC/MS software will capture the GC/MS data. The datalogging and data communication system will transmit the monitoring data both to the onboard computer for redundant data storage and to the AIM server for data storage and web access along with data analysis tools as described in Exhibit A. The data logging, transmitting, and visualization functionalities will be tested against relevant specifications in Exhibit A for acceptance.

Meteorological Equipment Acceptance Criteria

Acceptance criteria for meteorological equipment include the following: visual inspection of instrumentation integrity, measurement consistency with current conditions, and corrective actions for noted deficiencies. Upon delivery to BAQC, the vendor shall conduct qualitative/quantitative performance checks on MAAML meteorological sensors against collocated sensors. If results fall outside of the manufacturer's accuracy objectives, protocol requires sensor recalibration or replacement.

Supplemental MAAML Equipment Acceptance Criteria

Adherence to specifications in Exhibit A of the MAAML Agreement and Section 2 of the Request for Proposal (RFP) TC-7-2320-070-21183 will constitute acceptance criteria for all remaining unspecified MAAML equipment.